

In This Issue— *The Used Car and the Finance Company*

MOTOR AGE

Vol. LI
Number 13

PUBLISHED WEEKLY AT 5 SOUTH WABASH AVENUE
CHICAGO, MARCH 31, 1927

Thirty-five Cents a Copy
Three Dollars a Year

Every dealer and salesman in America will be saying this before the blue birds come—“Have you driven that new Little Custom Jordan? Well, if you haven’t—you don’t know what performance is—YET . . . ”

Edward S. Jordan

President
Jordan Motor Car Company, Inc.
Cleveland



American Hammered Piston Rings

THE BEVEL (on the upper edge) spreads a uniform film of oil on the cylinder walls, insuring proper lubrication.

THE GROOVE (on the lower edge) always stays full of oil, a further insurance of perfect lubrication.

OILSLOT

*The oil governing
Piston Ring*

50¢

*No higher than ordinary
oil rings*

THE SLOTS are cut through the lower edge of the ring and the oil does not have to leak past the face of the ring before it can drain off through the slots. There is no tendency for these slots to clog up.

HAMMERING creates outward tension, causing ring to "hug cylinder walls" throughout the life of the ring.

American Hammered Piston Ring Co. Baltimore, Md.
World's Largest Manufacturer of HAMMERED Piston Rings

The Toughest Tire Changing Jobs -

- MADE
EASY !

New tires that are stiff—or old rims warped and sprung—easy jobs, with a Weaver Tire Changer. The work is simpler and speedier. And you never spring a rim nor injure a tire.

All self contained, it handles disc and wire wheels, as well as solid or split rims without extra attachments. Mounts and demounts passenger car or medium sized truck tires with equal ease.

And just as safe as it is swift.

New customers come and old customers come back to the shop that uses a Weaver Changer. It breeds confidence and builds patronage because car owners much prefer it to the damaging tire iron and sledge.

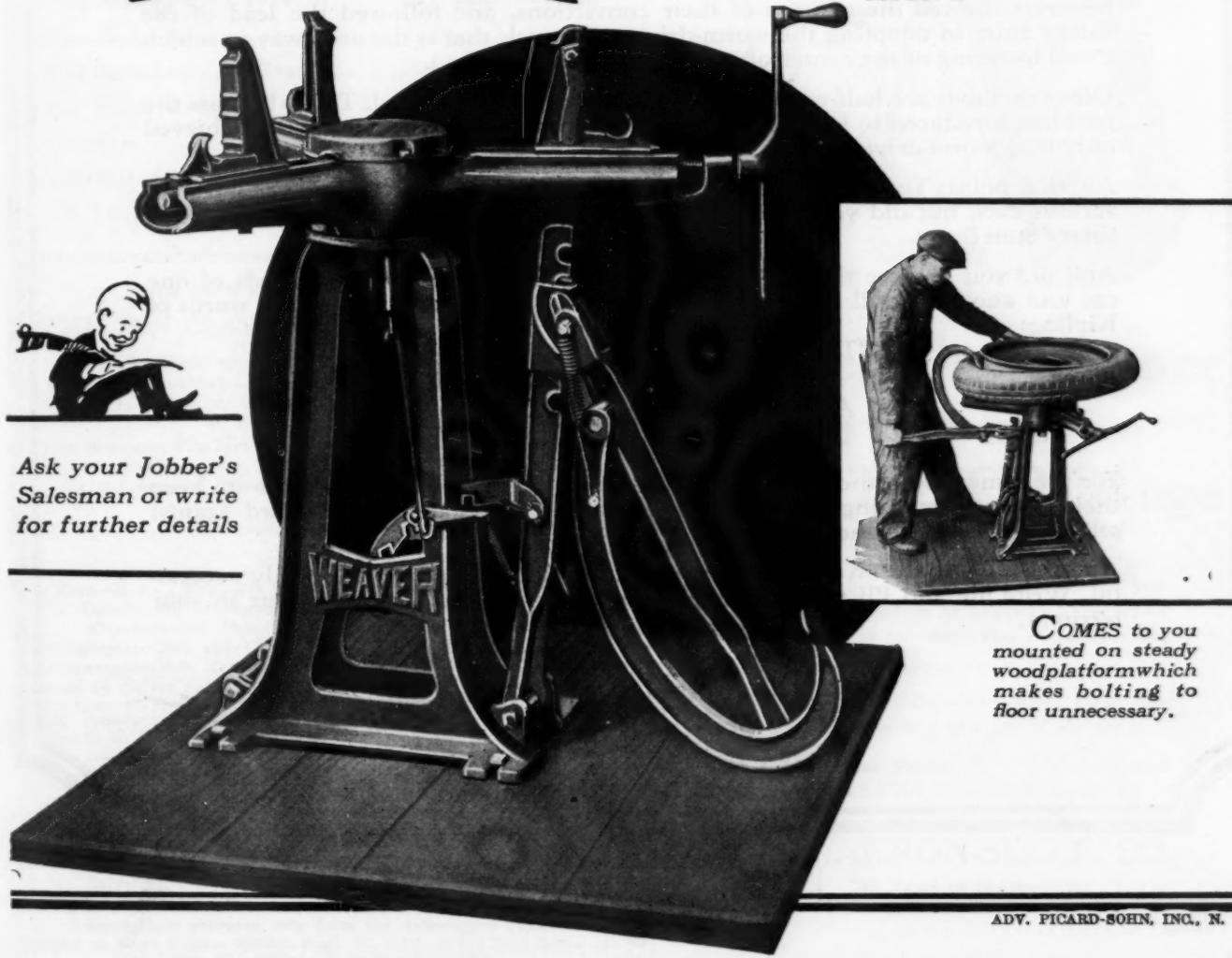
The Weaver Tire Changer is the backbone of profit in thousands of tire shops.

WEAVER MANUFACTURING COMPANY
Springfield, Illinois, U.S.A.

WEAVER CANADIAN COMPANY, LTD., Chatham, Ontario, Canada

WEAVER UNIVERSAL TIRE CHANGER

Model E



Ask your Jobber's
Salesman or write
for further details

COMES to you
mounted on steady
wood platform which
makes bolting to
floor unnecessary.

Is your car “A year and a half behind”?

by
F. E. Moskovics
 President

STUTZ MOTOR CAR COMPANY
 OF AMERICA, Inc.
 INDIANAPOLIS

DURING the New York Show it quickly became apparent that the keynote of up-to-date engineering is *lower center of mass*—yet only two automobile manufacturers showed the courage of their convictions, and followed the lead of the Safety Stutz in adopting the worm-drive—although that is the only way in which a real lowering of the center of mass can be accomplished.

Other methods are half-way measures—cheaper but ineffectual. This is because the problem is reduced to lowering the propellor shaft five inches, and that is achieved only by a worm-drive, such as used in the Safety Stutz.

Another point: You notice the word, “Safety”, now being used in connection with various cars, but did you ever find it so applied before we brought out the New Safety Stutz?

And did you observe the copies of Stutz horizontal louvers in the hoods of one car and another? Still other features will surely be copied—but, in the words of Kipling:

“They copied all they could follow,
 But they couldn’t copy my mind,
 And I left ‘em sweating and stealing,
 A year and a half behind.”

For the same reason these manufacturers spend their money to copy Stutz—to keep their stocks from being obsolete—the motor car merchant should guard against selling his prospects ancient models.

And that is one reason why dealers selling the Safety Stutz are uniformly successful. Write me and I’ll tell you if you can make money selling the Stutz in your territory.

(Signed)

F. E. Moskovics



MOTOR AGE

Vol. II.

Reg. P. S. Pat. Office

No. 13

JULIAN CHASE, Directing Editor
 A. H. PACKER, Associate Editor
 C. EDWARD PACKER, Associate Editor
 JOHN C. GOURLIE, News Editor
 W. L. CARVER, Field Editor, Detroit
 L. C. DIBBLE, Detroit News Rep.

SAM SHELTON, Editor
 CLARENCE PHILLIPS, Asst. Editor
 TOM WILDER, Architectural Editor
 E. G. GRIER, Art Director
 ATEL F. DENHAM, Field Editor
 JOHN CLEARY, Field Editor

CONTENTS

Watch the Back Door.....	9
Leading the Field with Buick.....	10
More Letters from Dealers on Used Car Profit Possibilities.....	12
The Finance Company's Used Car Problem.....	14
By Edward J. Becker	
Warner Hi-Flex Four-Speed Transmission.....	18
By P. M. Heldt	
Studebaker Announces Street Car Type Bus on New "75" Chassis.....	19
Bugatti Offers New Sport Roadster with Supercharger.....	20
The Readers' Clearing House.....	21
Interchangeable Bodies on 3/4-Ton Graham Brothers Truck.....	26
MOTOR AGE'S Picture Page.....	27
New Accessory Items.....	28
News of the Industry and Trade.....	29
Coming Motor Events.....	37
Specifications.....	38
CLASSIFIED ADVERTISING SECTION.....	73
INDEX TO ADVERTISERS.....	74-75

MOTOR AGE is published every Thursday by
CHILTON CLASS JOURNAL COMPANY

Mallers Building, 5 South Wabash Ave., Chicago
 C. A. MUSSLERMAN, President and General Manager
 J. S. HILDEBRAND, Vice-Pres. and Director of Sales
 W. I. RALPH, Vice-Pres.

DAVID BEECROFT, Vice-Pres. J. H. COLLINS, Vice-Pres.
 A. H. VAUX, H. J. REDFIELD,
 Secretary and Assistant Treas. Treasurer

Cable Address: Motage, Chicago
 Telephone: Central 7045

OFFICES

New York—U. P. C. Bldg., 239 West 39th St.; Phone Pennsylvania 0880.
 Detroit—710 Stephenson Bldg., Phone Northway 2090.
 Cleveland—540 Guardian Bldg.; Phone Main 6860.
 Philadelphia—56th and Chestnut Sts.; Phone Sherwood 1424.
 Indianapolis—519 Merchants Bank Bldg.; Phone Riley 3212.
 Owned by United Publishers Corporation, 239 West 39th Street, New York; ANDREW C. PEARSON, Chairman Board of Directors; FRITZ J. FRANK, President; C. A. MUSSLERMAN, Vice-President; F. C. STEVENS, Treasurer; H. J. REDFIELD, Secretary.

SUBSCRIPTION RATES: United States, Mexico and U. S. Possessions, \$3.00 per year; Canada, \$5.00 per year; all other countries in Postal Union, \$6.00 per year; single copies, 35 cents.

Member of the Audit Bureau of Circulations.
 Member, Associated Business Papers, Inc.

Copyright, 1927, by CHILTON CLASS JOURNAL COMPANY

Subscriptions accepted only from the Automotive Trade
 Entered as Second Class Matter, Sept. 19, 1899, at the Post Office at
 Chicago, Ill., under Act of March 3, 1879



You Sell Gas Oftener to the Man With a TASCO Gauge

... because he knows when he is running out of a supply, and refills with you instead of wherever he happens to be when the car begins to cough and he realizes the gas is low.

He buys other things, too, when he comes to your place—and you profit all around.

TASCO is for Model "V" Chevrolets, and Stars, at \$1.50 list—and Fords at \$1.25.

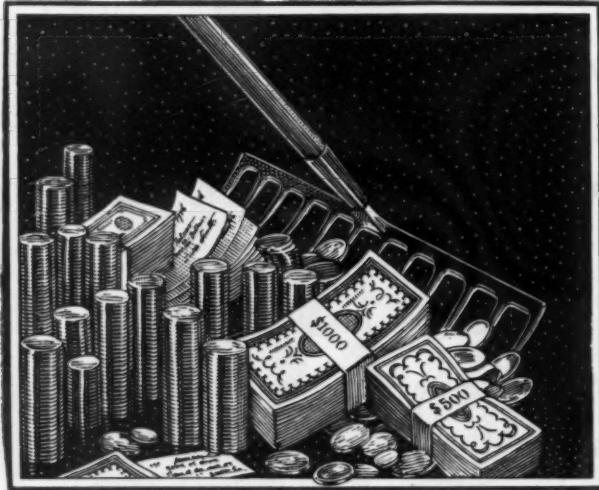
THE AKRON-SELL CO.

"42 Years in Business"

AKRON

OHIO

5 DAYS *instead of* five weeks



MORE AND MORE BUSINESS HOUSES are using the telephone over states and over the nation as they formerly used it to nearby towns. A long distance call appeals to the busy buyer. It commands the ear of those who would hesitate to see the salesman personally for fear needless time would be consumed. Long Distance calls are for the busy buyer or seller who must cut expense and make the most of time.

The telephone is the economical, dependable means with which almost any concern can reach any distance for business. There is hardly any limit to what the man can do who

ONE OF THE TRAVELING SALESMEN for a large Milwaukee dry goods house was suddenly forced to cancel his regular trip because of a broken leg. In the emergency he decided to try Long Distance. From his sick-room he covered in five days by telephone the same territory that normally required five or six weeks of traveling. On checking up he found he had gathered in by Long Distance 90% of his usual business!

travels by telephone. His hours go further. Every day, just as in an emergency, the telephone on your desk will reach distant cities and states as surely and effectively as it connects you with the other side of town. What far-away man or concern would you like to call now? You'll be surprised how little it will cost. Number, please?

BELL LONG DISTANCE SERVICE



Detroit Studebaker Sales

Indicative of Country-wide Increase

FOR the last half of February, Studebaker sales in Detroit showed gains of 86%, as compared with the same period in 1926 . . . the first 8 days of March registered a 95% increase . . . the first 15 days recorded a 106% increase!

Though registrations in Wayne County, in which Detroit is located, showed a general decrease of 23% for the first 15 days of March, Studebaker sales showed an *increase* of 61%!

Chicago Studebaker sales for February exceeded last year's by 135 cars. The first ten days of March beat the same period last year by 75 cars, while the month of March will surpass March 1926 by 200 cars.

In scores of other cities throughout the country these phenomenal increases have been duplicated —due to the solid values and brilliant performance represented in every model—from the Erskine Six, Motordom's Little Aristocrat, at a starting price of \$945 to Studebaker's President at \$2245.

Your territory may be open. Wire for franchise information—Department 51, The Studebaker Corporation of America, South Bend, Indiana.

S T U D E B A K E R

Seventy-five years young

A WORTHWHILE INSTITUTION

Last Year Our Special

SALES AND SERVICE REFERENCE NUMBER

registered tremendously in the success column with upwards of 25,000 of the country's best dealers and service station owners.

The paid circulation of *Motor Age* is composed of the most important buying units in the automotive trade—the men who sell and service a major percentage of all automotive products—the men who can underwrite the sales success of any manufacturer whose product possesses merit.

The 1927 Annual Sales and Service Reference Number will be published May 5.

Its editorial objective is expressed in three words: "Better Than Ever."

The theme of the issue will be:

How to Sell Automotive Merchandise and Service at a Profit

Among the important editorial features will be—

Motor Age Flat Rate Manual: A new kind of manual. More comprehensive. Simplified. A real guide to shop profits.

Repair Standards Chart: A diagrammatic showing of how to determine when moving parts are properly fitted, when they are serviceable, and when they need replacing.

Dealer's Passenger Car Directory: Alphabetical list of all American made cars, name and address of maker, type engine, price range and other facts daily needed by the country's service executives.

Sales and Service Profit Data on: New and used cars, parts, accessories, tires, fuel, lubricants and maintenance.

Money-Making Sales Plans: An imposing array of human interest stories of actual men who have done actual things to build actual profits in sales and servicing.

Electrical Equipment on 1927 Cars: Data that every maintenance establishment needs every day.

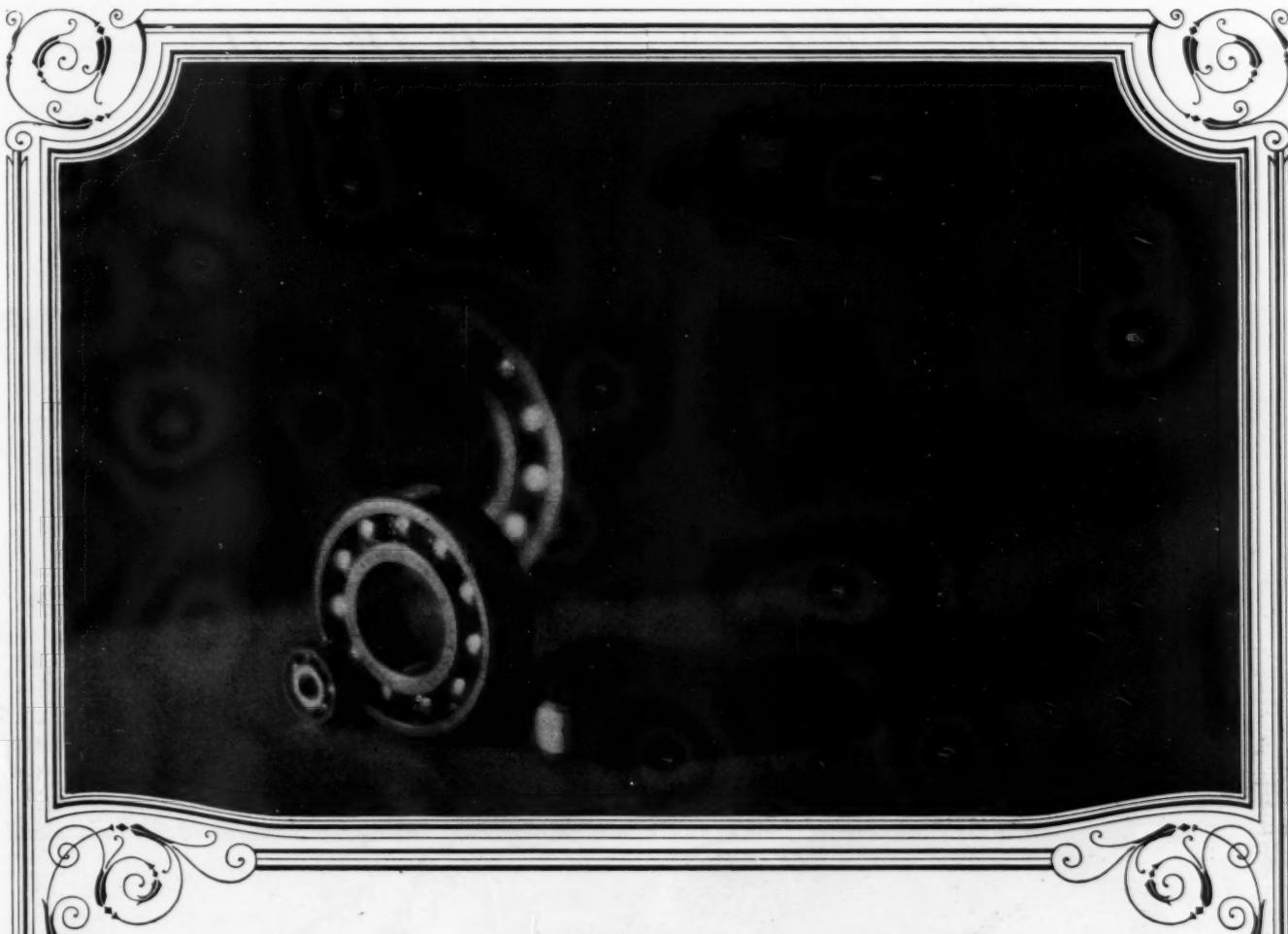
In total it will be filled with indispensable reference data of a kind that will be of maximum usefulness and value in every sales and service station in the country.

As a vehicle to successfully carry the advertiser's message to the most important elements of the trade, this issue—to be out May 5—will be of outstanding value. No advance in rates. Plan your copy now. Its early receipt will advance mutual interests.

MOTOR AGE

A Chilton Class Journal Publication

5 S. WABASH AVENUE CHICAGO



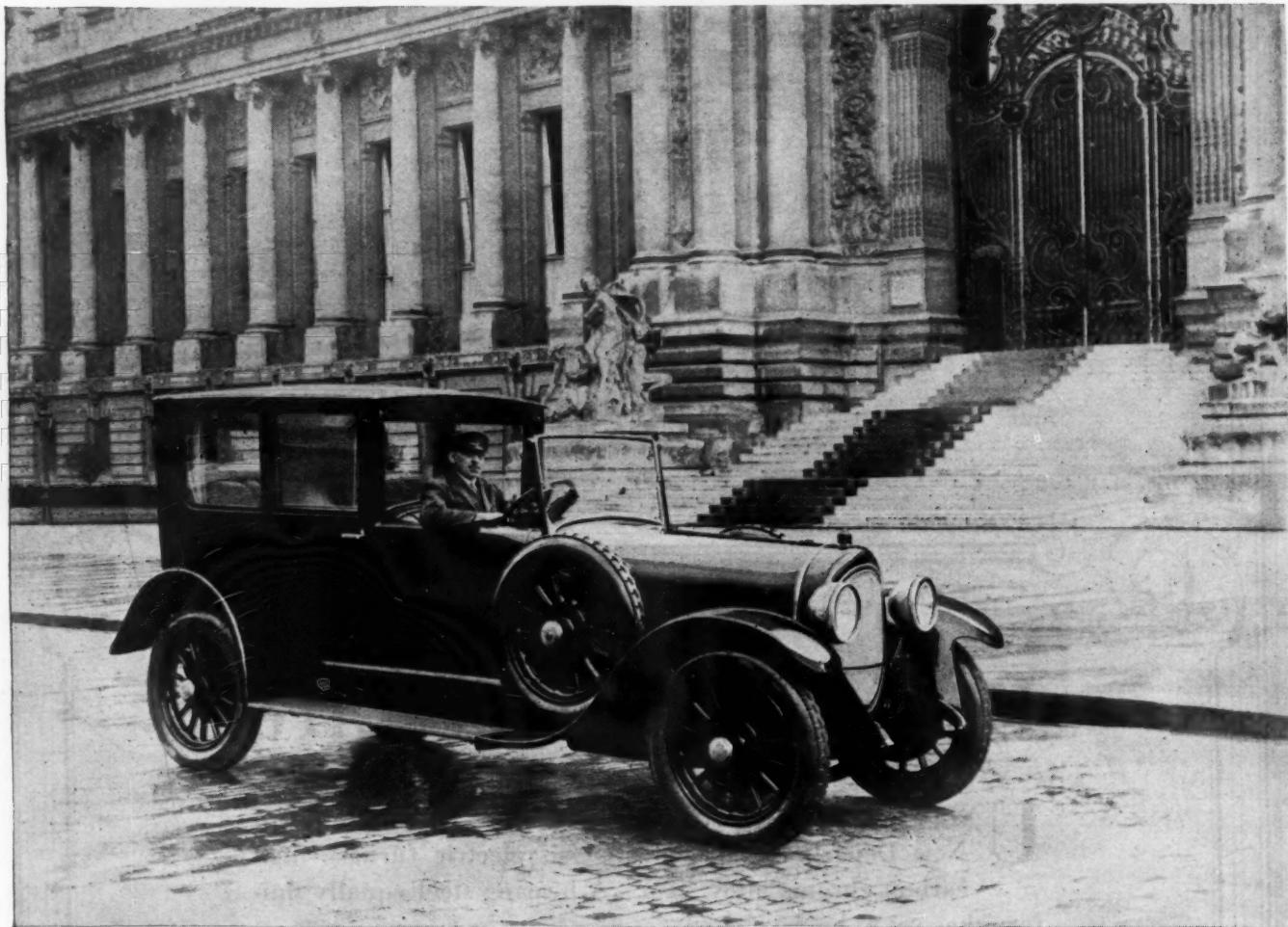
Unvarying Long Life

UNIFORM endurance is an outstanding characteristic of New Departure's special analysis electric furnace *high* carbon chrome alloy steel. A bearing steel equally uniform has yet to be developed.

That fact is, in a measure, responsible for a New Departure production schedule larger than that of any other anti-friction bearing manufacturer—to fulfill the requirements of present day business.

New Departure Quality Ball Bearings

The Delaunay-Belleville is Timken-Equipped



Timken results come only from Timken Bearings. That is why many of the great European motor car manufacturers, like Delaunay-Belleville, use Timken Tapered Roller Bearings—a matter of purely engineering preference.

Beneath the prestige and sales-leverage of the phrase "Timken-Equipped" there is always the plain fact that Timken-equipped cars are better.

The Timken Roller Bearing Co., Canton, Ohio

Watch *The* Back Door

Let It Be Opened at All Times by the Car Owners or Others on Legitimate Business Errands, But There Is a Glass on Which It Should Be Closed

A DEALER in a middle western state wrote to MOTOR AGE the other day about a fraud that was perpetrated upon his employes in the shop. The perpetrator of this fraud entered through the back door and worked the shop with perfect freedom.

In this particular case the swindler was offering shop work suits at prices much below those quoted in the regular channels of trade. When the orders were placed a deposit amounting to about one-third of the amount was collected and the balance was to be paid on delivery of the suits. That was early in January. Up to this time the suits have not been received nor has any thing been heard from the salesman who took the orders and collected the money. No such company as that which this swindler claimed to represent could be found listed in the telephone directory of the city given as its home.

This flagrant case of fraud calls attention to the ease with which strangers may enter automotive service stations for devious purposes. In the first place, in the interest of good work in the shop and for the protection of the workmen, unauthorized canvassers should not be permitted to have the liberty of the shop. In the second place, any merchandise or equipment that the men need individually in connection with their shop work can be purchased through the dealer from legitimate sources of supply operating regularly in that territory just as cheaply as merchandise of equal quality can be purchased anywhere.

The dealer or garage proprietor owes a certain measure of protection to his employes who may not be in as good position to judge the merit of various propositions as he is, and for that reason he should watch his back door.



Leading the Field

LETTERS KEEP CONTACT WITH CUSTOMERS

Form letters are successfully used by the New Rochelle Buick Company to keep the attention and patronage of customers. An index card is kept for each owner and when the card shows the owner has been longer than he should have been in bringing his car in, the first letter in a well designed series is sent to him.

THIS IS LETTER No. 1

According to our records your car has not been to our Service Station for several months. We assume that you are entirely satisfied as we have heard nothing to the contrary.

We are wondering, however, if your car is oiled and greased regularly, as the life of a car depends to a great degree upon its efficient lubrication.

If we are wrong in our assumption will you favor us by calling it to our attention?

Very truly yours,

If letter No. 1 does not bring the owner in, then letter No. 2 is sent after a reasonable time has elapsed.

LETTER No. 2

Under date of.....we wrote you advising that your car had not been to our service station in several months. Our records still show that your car has not been brought to us.

We owe it to our patrons to keep a record of every car in our territory and to bring this record up to date we must have your assistance. Is it that you are taking care of the car yourself, or are you having the car cared for by someone else.

Perhaps you have found it inconvenient to come to and from our service station while the car is left here. For this purpose we have put into operation a new Buick Sedan, which is our "Courtesy Car." The sole purpose of this car is to take owners home when they leave their cars here and call for them when the car is ready, if necessary.

For your convenience, we would suggest using the back of this letter for your reply. Thanking you, we are,

Very truly yours,

In the rare cases when neither letter No. 1 nor letter No. 2 brings the owner in, the customer is not abandoned, but a third letter containing a questionnaire is sent him.

LETTER No. 3

We are primarily interested in your car, that is why we are writing you a third time.

It is not our intention to persuade you to have your car serviced by us, and yet we want to feel that our owner's cars are being properly cared for. Along this line let us mention that we have two men in our Service Department whose duty it is to make diagnosis of cars brought to us and we would like to have you avail yourself of this service. There is no charge for this, after the diagnosis is made you can choose where you care to have the necessary work done.

Won't you cooperate with us by filling out the attached questionnaire? A stamped envelope is also enclosed herewith.

Very truly yours,

QUESTIONNAIRE

MODEL DATE.....
FRAME No.

1. Is your car operating satisfactorily?
2. If not, do you know why?
3. Do you service your car yourself?
4. If not, is it serviced by an Authorized Buick Service?
5. If not serviced by us, is it through any fault of ours?
6. If so, please give reasons.

REMARKS

.....
.....

SIGNED.....



Executives of New Rochelle Buick Co. Left to right: F. W. Fitcher, salesmanager; E. V. Derks, general manager, and D. J. Kennedy, service manager

E. V. DERKS of the New Rochelle (N. Y.) Buick Co., Inc., has done something new by specifically applying a few well worn business slogans whose truth is universally acknowledged, but whose utility seldom gets beyond providing copy for inspirational literature. As a result he sold more cars in his territory in the first eleven months of 1926 than did any other car dealer, not excluding the usual exception—the lowest priced car in the field.

There is no simple formula for duplicating Mr. Derks' success, for running an automobile business of this size is no simple job, but if there is one general principle employed throughout the business it is the application of common sense, in thought and care to each individual problem. In several instances this procedure has anticipated the "problems" to the extent that they were completely eliminated before they were born.

Among the tangible effects of Mr. Derks' policies are a service department that "serves" to such an extent that dozens of voluntary letters from pleased customers attest its efficiency, a used car department and simple stock control scheme that keep the number of used cars down and those on hand moving—a system of courtesy that *pays its own way*, and a repeat business that warms the heart.

How He Handles Used Cars

Used cars, the thorn in the side of many a dealer, haven't cost Mr. Derks any money yet—and there are good reasons why they haven't.

About the time the new models come out each year, sometime in July, Mr. Derks and his sales manager, F. W. Fitcher, his service manager, D. J. Kennedy, and his salesmen get together for an all-day session in Mr. Derks' office. The doors are locked and the telephone operator instructed to take messages but allow

with Buick

Story of a Dealer Whose Methods Enabled Him to Take First Place in Sales in His Territory Although His Car Sold for Much More Than Several Others

no callers. They are in for an all-day siege and are not to be disturbed unless the building catches fire. They proceed then to tear into the job of fixing a basic price for Buicks of various vintage dating back four or five years. Each member of the staff is permitted to give his estimate of the value of various models. At the conclusion these appraisals are averaged and a basic figure established.

Ordinarily the dealer figures Mr. Derks explained, to get the car as cheap as possible, while the salesman's idea is exactly the reverse. However, in this organization nobody goes in for such extremes and an appraisal which takes into consideration local conditions, and is, therefore, superior to any arbitrary prices fixed elsewhere, is adopted.

"We do this," says Mr. Derks, "not with the idea of trying to appraise the owner's car in advance at a hard and fast figure, but so that he may have some working basis. Naturally the aspects of the individual case must be considered.

Will Not Pay More Than Car Is Worth

"When a car has been purchased from us and serviced during its entire life in our station, we know almost exactly what it is worth and judge it accordingly. While our advance appraisals are only on Buicks, this working basis gives us a starting point to appraise cars of other makes on the basis of comparative first cost, general condition and model. We positively do not try to get trades for as little as possible, but on the other hand we will not pay more than we think the car is worth. We always figure in the cost of reconditioning, for all cars except those which are obsolete



Used cars are reconditioned. Here in the refinishing shop new paint is sprayed on

March 31, 1927

NEW ROCHELLE BUICK CO., Inc., NEW ROCHELLE, N. Y. APPRaisal SHEET							
Name of Car	Type	Year	Serial No.	Motor No.			
Name of Owner			Model		Pass. Cap.		
Home Address				Phone			
Business Address				Phone			
Mileage		Lic. No.		Date			
GENERAL		ITEMS	CONDITION	AMOUNT	ITEMS	CONDITION	AMOUNT
		Wash — Polish			Battery		
		Paint			Ignition		
		Grease all over			Starter		
		Change Oil			Generator		
		Doors			Horn		
		Top — Curtains			Light — Lens		
		Glass — Wind Shield			Fly Wheel		
		Hood — Fenders			Clean		
BODY		Right Front			Carburetor		
		Front			Valves		
		Left Front			Rod Bearings		
		— Rear			Main Bearings		
		Spokes			Pistons		
		Right Front			Piston Rings		
		Front			Wrist Pin		
		Left Front			Cylinders		
		— Rear			Water Pump		
		Tires			Thermostatic		
		Right			Fan Belt		
		Front			Spark Plug		
		Left			Tappet		
		— Rear			Magneto		
CHASSIS		Panning Boards			Oil Pan		
		Floor Boards			Motor Block		
		Upholstery — Carpet			Carburetor		
		Dash Instruments — Speedometers			Vacuum Tank		
		Hardware — Locks, Keys			Timing Gears		
		Tire Carrier			Master Legs		
		Frame			Master Block		
		Spring — Bolts			Tools		
		Shock			—		
		Front Axle			Mirror		
		King Bolts, Bushings			Motor		
		Steering Gear			Windshield		
		Rear Axle			Glosser		
		Brakes			Extra Lights		
		Wheels			—		
		Wheel Bearings			—		
		Clutch			—		
		Transmission			—		
		Universal Joints			—		
		Radius Rods			—		
		Gas Tank — Gauge			—		
		Drive Shaft			—		
		Spindle Arms			—		
		Tire Rods			—		
Appraised by...				Salesman	Total Cost Repairs		
Remarks					Selling Cost		
					Appraised Take in Value		

This comprehensive appraisal sheet is used to determine the price that can be paid for a used car

or not worth reconditioning are put in shape here before they are offered for resale. We figure that nearly all cars taken in on trade need refinishing."

In Mr. Derks' organization the man who is responsible for reconditioning the car, namely, the used car manager, assists in the appraisal of every car accepted on trade-in. Afterwards his estimate and the actual cost are compared. If the discrepancy is too great a basis of experience is provided for future transactions. This plan takes much of the guesswork out of appraising trade-ins.

Mr. Derks believes that the best "solution" of the used car problem is to solve it in advance. One item in this is his appraisal scheme. Another is the complete separation of the service department from the used car department. The latter is in a separate building. The men are specialists on reconditioning used cars. Mr. Derks' theory is that an entirely different type of work is required on servicing new cars and reconditioning old ones.

Reconditioning Done in Separate Department

"For example," he explained, "when one of our new car owners comes in here to get his brakes adjusted the men in our service department are not satisfied unless the brakes are 100 per cent perfect when they go out. Such a degree of perfection is not expected nor required in the case of used cars. If the brakes on a used car are 90 per cent perfect they are good enough, and the customer will never complain. I give this merely as an illustration of the

(Continued on page 17)

More Letters from Dealers on Us

Discussion by MOTOR AGE Readers Shows Difficulties of Handling Second Hand Vehicles Ex- cept at a Loss Under Present Conditions

From S. A. Robinson, Robinson Brothers Motor Co., Jackson, Mo. (Willys-Knight and Overland)

IN our seventeen years experience in the automobile business, we have always made money, but never the amount we should have.

I note that the average percentage on gross sales of eight of our leading factories is 12.8 per cent, and as you are already aware, the slogan of N. A. D. A. is 5 per cent for the dealers. If a factory can make from 10 to 20 per cent, certainly the dealer who has to handle the article in the retail way should do likewise. My idea is that this can be accomplished by making each transaction pay you a legitimate profit. This, of course, will necessitate a great many dealers doing less business.

Our experience last year was that we did \$100,000 less business in our retail organization, and made \$6,000 more profit. This was done by eliminating \$47,000 worth of undesirable used car business, and the other, of course, was the natural new car business that would result from the used car business.

This year, we intend to regain that \$100,000, but on the same basis and even better than we did on last year's volume.

The automobile merchant has neglected the profit end of his business. We find that the average merchant looks on his repair shop as a necessary evil; when in reality it should be a very profitable end of the business. There are always customers at your door ready to spend money with you. We find that in using a flat rate that you can take a payroll of \$300 per week and sell \$700 to \$800 worth of labor each week. Of course we have no other department in our business that can do this well.

There is no reason why we should not get what we give for a used automobile, plus what it costs to handle them, which is from 15 to 20 per cent. I look at it in this way: we would not accept a used car from any individual and sell it for him without him paying us what it costs to handle, still we give him cash consideration on a new car; pay the cost of selling it and then lose from 10 to 20 per cent. This is making a profit backwards, as the old Irishman would say.

I, personally, am attempting to get dealers to see this matter and we have been very successful in our city in not making rules for each dealer to go by, but to instill that desire in him that makes him want to be a better merchant and make more profit.

We find that the used car situation is getting better each day as a result of this friendly and close co-operation between the dealers. No one of us can control it, but all of us certainly have the solution to it.

I congratulate you on the good work of attempting to show the dealer how to make more money.

We are determined this year not to lose any money on the price we pay for used cars, and are setting 15 per cent for selling cost on everyone we trade, and in most cases, we are getting this price for them.

This letter, of course, does not answer the specific question you asked, but it may help you in some way to carry on this work, and I am extremely anxious to do whatever I can to help this work.

From W. H. Hathaway, Hathaway-Buick Co., Oshkosh, Wis.

IN regard to used cars you have certainly touched a subject on which there is a wide difference of opinion. In fact, we believe there are as many differences of opinion as there are dealers and manufacturers.

Regarding this subject would say that the writer has been in the automobile business some 23 years and as a result of this experience he is of the opinion that the used car can be made a profitable producer through education and the lapse of time. We personally feel that that is the only

Us Profit

MOTOR AGE Platform for Greater Dealer Profits

- ¶ More net profit per dollar of sales.
- ¶ Elimination of used car losses.
- ¶ Make the used car a profit producer.
- ¶ Eliminate unmerchantable cars from the trade.
- ¶ Put the maintenance department on a profitable basis.
- ¶ Boost profits by accessory sales.
- ¶ Tires will help swell your profits.
- ¶ A fair flat rate plan for customer and mechanic.
- ¶ Get a profit from parts and supplies.
- ¶ Develop sales possibilities of territory to full extent.
- ¶ Dealer must not be forced to take more cars than his territory will absorb at a profit.

way the proposition is going to be solved successfully.

We feel that the campaign of education being carried on by the trade publications today is doing much toward the education of the dealer. As we look back over our past experience we find that we ourselves are gradually getting our used car business in better shape. We used to lose a lot of money in this department and a comparison of figures over the last number of years is gradually showing a better condition until this last year our used car business showed us a profit when ordinarily it showed us a loss. This profit was only on the cost of the car plus the betterments. We have not as yet got it to the point where it pays its share of the overhead. We are, however, working toward that end and have every confidence that it will be done.

However, we feel that the campaign of education must not only embrace the automobile dealers, but the manufacturers and the purchasers. If the purchasers could be reached in the same way that the dealer is reached and the same facts laid before him we feel it would help the dealer in buying the car at the price he should pay for it. There are thousands of buyers today who feel that the dealer is not giving them what their cars are actually worth and that the dealer is making a lot of money on the second hand cars. If they do not feel that way about it, the talk that they give us certainly gives that impression. Of course, competition and factory pressure on quantity of sales has a great deal of bearing on this subject with the dealer. The manufacturer may state that his policy is not to press the dealer, but we find that their policy is not always carried down through the organization to the manufacturer's travelers, and frequently these manufacturer's travelers, being the ones that come in contact with the dealer, create an impression with the dealer that is not endorsed or recommended by the factory itself.

These things we feel will be rectified in time and we are hoping that it will come rapidly. If we felt that that situation was hopeless and that there was no chance of making a better percentage in the automobile business in the future

ed Car Possibilities

than there is today, we would not expect to remain in the automobile industry.

From Frank R. Tate, Tate Motor Co., Inc., St. Louis, Mo.
(Dodge Brothers)

IT is my personal opinion that under the stress of leadership and the over-production of most of our large factories, fictitious list prices, trading allowances and unscrupulous manufacturers who demand great numbers of associate dealers in the same city, that it is an absolute impossibility for anyone to net a profit on used cars, in the nearest approach to decent accounting.

Our business has fallen off during the recent slump in the general motor car industry, but if I wish to have a couple hundred thousand dollars tied up in used cars worth 30 cents to 50 cents on the dollar, I could report sales in my city greater than any other dealer, with possibly the exception of the combined Ford and combined Chevrolet dealers.

For the year just past we finished in the city and county in a very comfortable fourth position, including Ford and Chevrolet total sales, and these figures did not include our commercial and truck sales.

These extra profits that manufacturers give dealers to "kid" themselves with, and particularly the obnoxious practice of giving them an extra 5 per cent for an additional volume at any stated portion of the season, are among things that are making it very hard for a company that does not believe in fictitious list prices.

Incidentally, in most cases it makes it worse for the poor dealer who works under this method.

Prior to the last six months, this fact is well proven by reason of the results obtained by all Dodge Brothers dealers throughout the United States, none of whom have ever had more than 24 per cent factory discount, with no bonuses, but still they have been among the most prosperous retailers in the entire automobile industry. Of course distributors who had one or two states, have shown more profit.

Right here, I have always personally believed that a distributor should only have advantage of additional discount on wholesale business, and that all retail business he conducted should be on the same discount as a straight dealer, thus avoiding the powerful advantage of having a wholesale discount on which to do a retail business.

The truck situation is more abominable than any, and when a factory branch can, through fleet discount and wide trades, reduce the actual cost of his product 50 per cent, it makes it awfully hard for a dealer who has a straight discount to work on.

The funniest part of this, to the writer, is that keen, smart heads of big business, seem to overlook this point entirely and cannot get it thoroughly straight in their minds when it is told to them.

I do not believe any dealer in new cars can show a real honest net profit in used cars until some of the above mentioned subjects are put on a better basis. I find a great many who have reported profits, charge most of the expenses to the new sales department, through their power of reasoning that the sales department created this evil and necessity. But that is not accounting.

I find a great many dealers, and we ourselves are among them, who have always made a very good looking gross profit in the used car division, but who cannot produce volume enough to make it carry fixed overhead, showing a net profit.

From H. Hansen, The Lind Motor Co., Lind, Wash. (Ford, Lincoln and Buick)

I HAVE had 17 years experience in the automobile business, 14 years experience as a merchant, and have seen nine automobile dealers go to the wall in our town and fifteen in the county. I have handled the best moving

Next Week

Shall we scrap the old junks that are forever presenting themselves to the dealer for appraisal?

If so, how?

One of the planks in the MOTOR AGE platform for greater dealer profit is "Eliminate unmerchantable cars from the trade." In an article next week we will discuss some of the practical phases of this subject and then in a succeeding issue we hope to be able to publish letters from dealers commenting on this problem.

lines, Ford and Buick, and have stayed with them, but have found that even with these lines one can not make it pay. I have always had a bookkeeping system second to none, and found that since 1921 the automobile business has not been up to standard. To save myself, I took on other lines as well, such as, combine harvesters, stationary gasoline engines and such things that go along with the automotive line. I had an overhead and establishment by this time that had to be taken care of.

The used car business is the headache in the automobile business today. Why hasn't someone nerve enough to go to the root of it and actually find out and analyze where the trouble comes from? Taking headache pills may stop your headache temporarily, but if you don't get at the source of your trouble it will come back just as the used car problem has in the past eight years, and is getting worse. Dealers are dying for want of a cure, and your pills are not helping.

I claim the manufacturer is the cause of the condition which prevails in the automobile business today, and if the truth were actually known, the industry would open their eyes and get busy, but they are too busy making cars as fast as possible so they can put their competitors out of business. It is the survival of the fittest and I believe, the next five years will be the elimination period. What about the dealer and the used car problem in the meantime?

Here is the bug in the used car problem. The manufacturer establishes a distributor for a certain large territory. The distributor then establishes dealers in said territory to retail their automobiles. The manufacturer estimates that the distributor will have to sell a certain quota, and again the distributor gives each dealer a certain quota to sell in each dealer's territory, and believe it or not, right there is the source of the used car problem. There are manufacturers clamoring for representation and they are going to get it by hook or crook. And what do we find in the territory today? One of the worst butchered up businesses history has ever known, everyone howling for used car pills.

Dealers' meetings are held all over the country, they call them dealers' meetings, but I have attended hundreds, but fail to see that they were anything but a manufacturer's and distributor's meeting. This takes from one to two days of your time in which you are crammed full of factory policies, which in a few months are discarded to try something else. If you have done fairly well in the past season you are patted on the back, told go home and double your quota next year.

The dealer is the goat, and as Barnum said, "There is a sucker born every minute," and there surely is. The manufacturer and people both know it. It is amusing to hear the people laugh up their sleeve and say, "I can't understand where he is going to get off, allowing such a price for my old car." I know of distributors who establish dealerships to anyone that has money enough to pay the wholesale price of the car, in order to make their quota with the factory, and to hold their agency. Together with this kind of competition and jealousy among the dealers, trying to put their competitors out of business, thereby breaking themselves in order to meet the manufacturers' quota of sales. Where the factory estimates of the potential buyers are beyond reason, making the dealers

(Continued on page 16)

The Finance Company's Used

An Automobile Banker's View of the Trade-In Evil and His Suggestion for Its Cure by the Dealer

By EDWARD J. BECKER

Vice-President National Discount Corporation

BACK in the days when populism swayed the political ideals of millions, a perfervid campaign orator was propounding the sacred symbol of 16 to 1, when he was interrupted by a dignified old gentleman with the remark: "That is in violation of the law of supply and demand." Whereat, the proponent of panaceas thrust his hand in the breast of his long-tailed coat, and in oratorical chest-notes proclaimed: "Feller Citizens, when you elect me to a seat in Congress, I will see to it that such infamous legislation is repealed."

We may laugh off such a proposition, and yet the economic history of every civilized country is replete with solicism. We read of the Mississippi Bubble in the days of Louis XV, the Assignats of the French Revolution and their counterpart in the Colonial currency, which the makers of the Constitution were compelled to repudiate. The history of our own money discloses every possible expedient from a national bank of issue to wildcat currency, emitted by state banks, many of them with a printing press as the chief asset! Nor should we forget the popularity of the Greenback and Free Silver delusions. It was not until a century and a quarter after the adoption of the Constitution that we finally hit upon the Federal Reserve System, based upon the economic fundamental that sound currency can only be sound if there is sound credit back of it.

It required over twelve decades for a great commercial nation like ours to develop a safe and workable money system. It is then not surprising that so recent development as automobile financing should have displayed many of the diseases of infancy and even now is not free from the acne of adolescence.

Avoid Unsound Credit

The gravest criticism of installment buying in general, and the retail financing of automobiles in particular, is based on the presumption of an unsound extension of credit. To put this objection to the test we must consider the relatively small credit losses which any well managed finance company sustains. It is true that credit is sometimes extended to buyers who are utterly unworthy. This is equally true of any business involving an annual turnover of many millions of dollars. It is even true of the most conservative commercial banks.

It is economically sound to lend money against a



If the bankers and finance companies go into united action with the dealer, better conditions will be quickly effected

fixed income, backed by adequate collateral. It would be perfectly safe to make a loan on the promissory note of a man with an adequate life insurance annuity. It is equally safe to lend money to a man enjoying a good salary or other source of income, if the repayments are not prolonged beyond a reasonable period.

It is true, the buyer of a car may lose his position or his income may be reduced to a point where collection becomes impossible. The finance company then has recourse against the dealer, or if the paper is not endorsed, against the automobile as collateral. Every well-regulated finance company takes the precaution of repossessing the automobile as soon as any purchaser defaults his payments.

In the case of new car repossession, the down payment at the time of purchase, plus the installments paid, usually take care of normal depreciation. A resale of the car will, therefore, realize enough to equal the unpaid balance and the costs of repossession and resale. The potential losses arising from new car transactions are negligible. Statistics show that the average repossession losses are less than one-sixth of

Car Problem



GEOFFREY
GRIER

27

one per cent, provided the terms are kept within limitations recommended by the National Association of Finance Companies.

A Problem for the Finance Company

The used car is a problem not only for the finance company—every finance company—but to an even greater extent, it constitutes the principal cause of failure among automobile dealers. There are approximately 50,000 automobile dealers in this country. Based on last year's production, this means an average of eighty new cars to the dealer. The dealer's gross profit is limited to twenty per cent of the retail price, or thereabouts. Distributors secure a larger discount in compensation for extra service as wholesalers, and some dealers are granted an extra discount for quantity sales. The average gross profit on new car business may be about fourteen to fifteen thousand dollars a year.

Most dealers consider themselves fortunate if they do not have to take a loss on the total of used car transactions. When it is considered that the average gross

profit is less than fifteen thousand dollars, that from this fund the dealer must deduct marketing and service costs and possible losses on used car transactions, the hazard of the business is immediately apparent.

The custom of taking a used car in part payment for a new one originated in the early days of the industry. Twenty years ago there were a little over 100,000 cars registered in the United States. Eighty per cent of them were not over two years old. Prices were high and there was an easy turnover for used cars.

With the growth of competition in wholesale distribution and retail selling, the manufacturers adopted the quota system quite generally. The dealer is obliged to sell a fixed number of units if he wishes to retain his agency. The system has given a tremendous stimulus to production and sale, and is a decided benefit, if not carried to excess. But in the struggle to make their quotas dealers began to overbid each other for used cars taken in part payment for new cars. As a result, the dealer may acquire a number of used cars which cannot possibly be sold for as much as cost, not to mention reconditioning and selling expenses. The used cars must either be sold at a loss or entrusted to a time purchaser with frail credit standing and questionable judgment. Here we find the source of most finance and dealer losses.

Situation Will Not Remedy Itself

Nor is this situation likely to remedy itself. In 1921 there were registered about ten and one-half million motor vehicles. During the next four years about thirteen and one-half million were manufactured and some four million were scrapped. There was then a net increase of nine and one-half million and a total registration of twenty million at the close of 1925.

Of this total, possibly five and one-half million might be classified as new cars in the hands of the original owners. The remaining fourteen or fifteen million were used cars. In other words, there were three used cars to every new car. With the growth of production during the last two years, the ratio of used to new car transactions will increase in arithmetical progression. Of the estimated five and a half million of "new" cars, as at the close of 1925, practically all of them will come on the used car market during 1927, and even though the unprecedented number of two million cars are sentenced to the scrap pile there will still remain a total of eighteen million used cars to deal with.

All signs indicate that the next four years will be characterized by at least normal prosperity. Let us, nevertheless, assume that the mythical saturation point for automobile production has been reached, and production during the ensuing four year period will be no more than the average of the last three years. This would total over sixteen million new cars—a decidedly conservative estimate, in view of the past performance of the automotive industry.

(Continued on next page)

THE FINANCE COMPANY'S USED CAR PROBLEM

(Continued from preceding page)

The average life of a passenger car is now eight years. During the four year period in prospect, the output of the year 1920 to 1923, inclusive (nearly eleven million cars), will go to the scrap pile, leaving a net of about twenty-seven million cars in use. Not more than four million of these can then be considered new cars, so that by the close of 1930 we may safely anticipate twenty-three million used cars in actual service or awaiting resale, as against a little over one-ninth their number in new cars. Such a condition dare not be contemplated with equanimity.

Having located the disease, let us wholeheartedly seek the remedy. It is not far to seek. It lies within the boundaries of good commercial practice.

The dealer, unaided and compelled to absolve himself of his factory quota, cannot remedy the situation. The finance company papers, as a whole, has always proven though some of their offerings are below par, can always cover the increased risk by increased rates on used car transactions. Beyond that point the finance companies dare not disrupt the trade by any radical step. The banks can lend their moral support, it is true, but banks are also subject to competition, and finance company paper, as a whole, has always proven a profitable source of income.

Contingent Liability Not Shown

If, however, banks and finance companies go into united action with the dealers, better conditions can be quickly effected. The fundamental attack must be against the uncommercial practice of trading in used cars for more than their actual worth in a competitive market. To start with, finance companies cannot hope to exist and advance more than the appraised valuation of a given used car. The finance rates must also be substantially higher for used cars than for new ones. With the support of the banks this policy can be adhered to and will tend to stimulate dealers to a strict conformance with sound commercial practice.

The balance sheets of every dealer reflect the situa-

tion. His essential current assets include used cars inventoried at what they cost, or perhaps a few dollars less. His fixed assets include shop and equipment; chiefly devoted to reconditioning used cars. The right hand column does not show contingent liabilities to finance companies, and this item may be many times greater than his net worth. Too often the terms "net profit" and "net worth" represent only the difference between the used car inventory and the amount for which these same cars can actually be turned into cash.

This precarious condition can be remedied by dealers limiting their offers to the fair market value for a used car, and then it can be resold at a reasonable profit on the investment. Or better, if every dealer flatly refuses to accept used cars in trade, the owners would have to take them into a competitive market, just as he does his old shoes or old furniture. Used cars would then sell for their intrinsic value, based on the residual mileage, or demand and supply, not as at present, the price his competitor compels the dealer to bid for the car. Cars of negligible commercial value would be more rapidly consigned to the junk heap.

There would then arise, what was once quite common in the larger centers, merchants who buy and sell used cars exclusively. Used car dealers could not afford to pay more than the article was worth, nor would competition permit them to sell for more than a fair price. The condition of the car could be certified by competent experts, after a thorough laboratory test. Apparatus for this purpose is available in every large city today. Based on such certification, a finance company could safely and reasonably buy used car paper, assured that the collateral was what it purported to be.

The used car problem will cease to be a cause of perplexity and will be reduced to its simplest terms as soon as traffic in used cars has been squared with economic principles. It can be done. Even more, it must be done before the retail marketing of automobiles can be said to rest on a sound commercial foundation.

MORE LETTERS FROM DEALERS ON USED CARS

(Continued from page 13)

go out and force sales by giving a good price for used cars and selling them at a bargain. They tell you to trade cars but trade carefully and at the same time your quota is so many in order to keep the factory going.

Here is probably a remedy.

First. The dealer must have the right to run his own place of business.

Second. The production of cars must be cut down to a reasonable output to take care of the demands on a more sound and stabilized scale, instead of everlastingly trying to make a record production, which is bound to reflect back sooner or later to the so called used car problem, as the dealer can not stand these losses forever.

Third. That the dealer make his own estimate as in other lines of business, as to how many cars can be sold safely, without having to go out and buy the business. The dealers are in business to make money also. They have to sell on time with a certain amount of risk, have to take in old cars on trades, and sometimes have to sell three cars in order to sell one new one. The manufacturer gets cash for his cars, takes no trade-ins and tells you how to run your business, for his own personal benefit. Any opposition against their policies means loss of their dealer's contract sooner or later. The poor dealers are between the devil and the deep sea. It is either the manufacturer, who is going to put him out of business or the used car problem, as discount on cars makes it impossible to cope with the situation as it is today.

From. A. S. Eldridge, Eldridge Company, Seattle, Wash. (Buick)

IT is possible to make the used car a profitable part of a dealer's business. The story is short, but very hard to put into practice. In a "nut shell," it is: Take them in cheap enough; put them into salable merchandise, and sell them at the right price.

It is just like merchandising any commodity—the same fundamental principles are needed. You can't buy an article for a dollar and sell it for seventy-five cents and live. Neither can you buy a used car, sell it for less than you paid for it—or even the same price—and continue in business. Today, two used cars must be sold for every new car sold, and many dealers are trying to sell three units for one profit. This cannot be done either.

The day will come when successful automobile dealers will make money on used cars. When that time will come, no one can predict. It will be, however, when dealers have more "backbone" than they possess today in buying used cars. Today, the automobile buyer is a better salesman than the dealer is a buyer. Consequently, the used car is sold to the dealer for more money than it is worth, and, therefore, shows a loss when it is sold.

When the day comes that an automobile is bought by a dealer for its value, less conditioning, selling expense, and a reasonable profit, then the used car problem will be solved.

LEADING THE FIELD WITH BUICK

(Continued from page 11)

difference between work in the service department and in the used car department. I hold the opinion that reconditioning cannot be done properly in the service shop."

The New Rochelle Buick Co. operates a complete paint spraying shop in conjunction with the service department. The paint jobs are in every respect as good as the factory product. The work is done with infinite pains and the attention paid to the minor details makes a great difference in the finished job. For example, motors are thoroughly cleaned and sprayed and the radiator core, ordinarily neglected in a refinishing job, is carefully cleaned. To illustrate the point, Mr. Derks showed the writer a job turned out by the paint department in comparison with a car just received from the factory. The used car job was just as good as the factory job so far as the eye could determine, and the radiator core actually looked cleaner and brighter than on the new car. "These things cost very little," Mr. Derks explained, "but they make a great difference when you have a used car to sell."

Mr. Derks keeps down his used car inventory with an ironclad rule that no salesman shall have more than seven used cars on the floor at any one time; that is, he cannot take in more trade-ins after having accepted seven until some of the seven have been sold by him.

"I see no reason why the dealer should assume all of the responsibility in such cases," said Mr. Derks. This policy and the careful control of the used car department prevent any serious overstocks.

Card Index of All Customers

Mr. Derks has installed a system of customers' cards, which is easy to maintain and which pays for itself many times over. It was installed by one of the large companies specializing in filing systems and is kept by one of the girls in the organization, requiring not more than two or three hours' work per day. It is based on the fundamental idea, Mr. Derks said, of "keeping what we have and getting a little more right along."

In it are listed the names of hundreds of customers and a complete record of every time their cars are brought into the service station, order number of the serviced job, etc. If the customer does not bring his car in for service, letters are sent to him at regular intervals inquiring as to whether or not his car is giving satisfactory service, whether it is being cared for properly, whether it is inconvenient for customers to come to the service station and, finally, in the third letter, a questionnaire, which the customer is asked to fill out and return.

In order that the customer may not be inconvenienced, the New Rochelle Buick Co. operates a "courtesy car," which has been a profitable investment. When a customer brings his car in to be serviced, the "courtesy car" takes him home. When it is finished, the "courtesy car" goes after him. The car is always available and occupies the entire time of one man. While dividends in good will alone make the service worth while, it also provides a standard of comparison by which the customer may judge the quality of his old car in comparison with the latest model.

Similarly, a "doctor's car" and an "instruction car" are operated. The "doctor's car" is loaned to physicians who, necessarily, must use their cars constantly and, therefore, have no time to get them serviced unless

they can have the use of another car. Mr. Derks has learned from experience that it is inadvisable to paint the words "courtesy car" or "instruction car" on the automobiles used for this purpose. In the case of the "courtesy car," the man who is unconsciously receiving a demonstration is the potential customer rather than those who view it from the sidewalk, and the words "instruction car" merely serve to intensify the self-consciousness of the learner.

Dealer Must Know His Costs

Mr. Derks is convinced that the customer's file cannot be considered as essentially and exclusively for the benefit of the salesman. He points out that the salesman's commission alone is not sufficient incentive to keep the men selling cars. Sometimes, he says, the salesman's enthusiasm, after several successful months, is likely to slack off slightly. This the dealer cannot afford. He must then devise other means for following up and developing potential sales and augmenting the salesman's efforts.

Mr. Derks believes also that the present day dealer cannot survive unless he knows his costs absolutely. He has found it necessary to departmentize in great detail in order to know these costs. In the New Rochelle Buick organization this policy has been carried out until everything is apportioned down to almost the last nickel. Even the amount of light required in various departments, including the number of bulbs, the wattage and the amount of heat per cubic foot is estimated.

"This costs money," said Mr. Derks, "but we decided that we might as well do the job thoroughly and we have found that it pays. We know positively where all of the leaks are and are thus able to eliminate them."

Asked whether or not considerable duplication of equipment was not required in a complete separation of the used car and service departments, Mr. Derks explained that the application of judgment in this regard had solved most of the problems. Inexpensive equipment constantly used is duplicated while more expensive machines, which the mechanic has occasion to use less frequently, serve both departments. It is only a few steps from the used car department to the service shop. When a mechanic wants to use a machine in the service department he brings his work to it. This has proven entirely satisfactory.

Through the operation of the appraisal plan and the economy and efficiency with which used cars are reconditioned, the New Rochelle Buick Co. has been able to put a fixed price on a used car and to stick to it.

Call Attention of Automotive Industry to Airplane Lubrication Tests

The United States Bureau of Standards is calling to the attention of automobile engine manufacturers tests which now are being conducted at the bureau of lubrication of air craft engines at low temperatures. The bureau states that the tests will prove of particular value to automobile engine manufacturers as an aid to solving the problem of auto lubrication in cold weather.

Particularly attention is being paid in the tests to the dimensions of the pump and the feed lines, so as to make them adequate for sufficient lubrication, and yet provide against overcooling when temperature conditions are such that oil flows freely.

Warner Hi-Flex Four-Speed Transmission

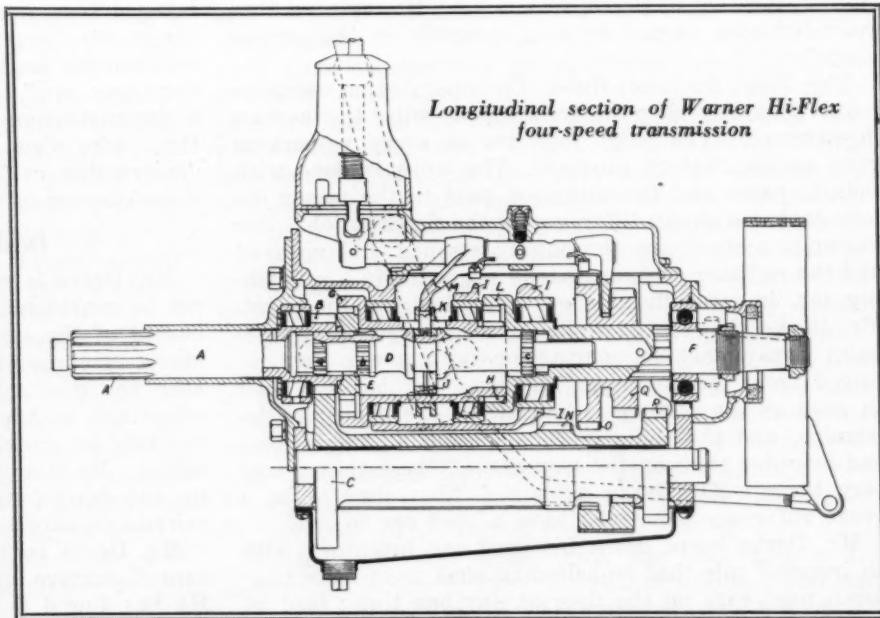
By P. M. HELDT

A FOUR-SPEED transmission for use on passenger cars and light trucks has been brought out by the Warner Gear Company of Muncie, Ind., and already is standard equipment on one eight-cylinder passenger car model. The transmission has a direct fourth speed and is designed for use with a comparatively small rear axle reduction. With this transmission the total reduction from engine to rear axle on high is less than with the conventional three-speed gear on high, with the result that when driving in high gear the engine will run at a lower speed for a given car speed. This means that the car is more comfortable at high speeds, because of the reduced engine noise and vibration; that engine wear and tear is reduced and that the fuel consumption is cut down. Furthermore, the maximum speed of the car on level road is generally increased somewhat. All of these advantages are obtained at the cost of a slightly heavier and slightly more expensive transmission and of somewhat more frequent shifting of gears.

As compared with the conventional four-speed transmission, largely used on heavier trucks and also on passenger cars in Europe, the new transmission has the advantage that the third, or next to the highest speed, is practically as silent and as efficient as the top gear or direct drive itself, hence there is not the same objection to operating on a geared drive as there is with most of the conventional transmissions.

This third speed is obtained by means of a train of two pinions and two internal gears. The internal gear is inherently somewhat more efficient than the spur gear, because of the reduced amount of sliding at the tooth surfaces, and it has been found also much quieter. This is probably due to a more effective oil cushion, tooth contact, in fact taking place in an oil bath.

Referring to the accompanying sectional view of the transmission, the clutch shaft A extends through a long hub on the forward bearing plate, and at its rear end carries the constant mesh pinion B, which latter meshes with the constant mesh gear C of the secondary cluster gear which revolves on plain bearings on a spindle fixed in the gear housing. Clutch shaft A is drilled out from the rear end, and internally splined, and within the hole in it is located the forward end of a floating shaft D which is splined at both ends and also some distance back of the forward end. By means of the forward splines A it remains in driving connection with the clutch shaft at all times, although it can be shifted axially a certain distance by means of mechanism to be described. The second set of splines B serves to place the floating shaft D in driving connection with the third speed drive pinion E, while the



Longitudinal section of Warner Hi-Flex four-speed transmission

set of splines C at the rear end of the shaft connect it with the tail shaft F when the floating shaft is moved toward the rear. In the drawing the floating shaft is shown in the central or neutral position, in which it is connected neither to the third speed drive pinion nor to the tail shaft.

The floating shaft is surrounded by a shell-like member comprising the internal gear G and the spur pinion H and referred to as a double internal gear. This member is supported in two Hyatt bearings mounted in a bearing support I forming a bridge across the main housing. At about the middle of its length the floating shaft is enlarged

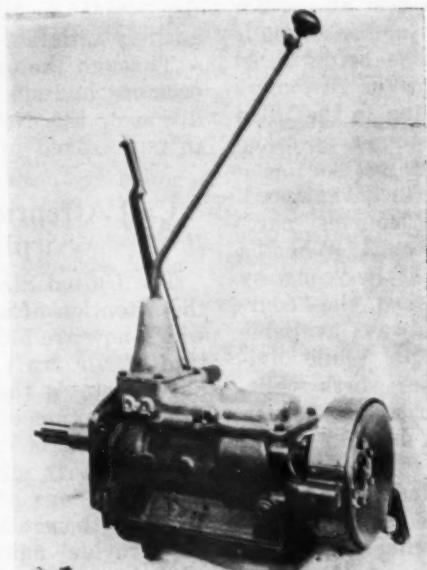
and has a groove for a shifter collar cut in it. Into the shifter collar groove in shaft D fits eccentrically the collar J which connects by pins extending radially through longitudinal slots in the wall of the hollow member G-H with a grooved collar K on the outside of this member. Into the groove of this collar engages a fork M mounted on one of the shifter bars of the transmission.

When the floating D shaft is shifted forward the third speed drive pinion E is secured to it by means of splines B, thus giving the third speed, while if shaft D is shifted toward the rear, the splines C connect it with tail shaft F, since the floating shaft is at all times in driving relation with clutch shaft A through the splines A, the tail shaft is then connected to the clutch shaft through the floating shaft, and the drive is direct.

It will be noticed that the tail shaft F at its forward end carries the internal gear L, with which meshes the pinion H. Thus for the third forward speed the drive is from the clutch shaft through the internal combination EG to the double internal and thence through the internal gear combination HL to the tail shaft F. Except when driving on third gear the internal train runs idly.

First and second speed and reverse are obtained in the usual manner, except that the secondary pinion for the second speed is located close to the rear wall of the housing and the pinion for the first speed and reverse further forward, which is the reverse of the conventional arrangement. For the first speed the power is transmitted from B to C and from N to O, while for second speed it is transmitted from B to C and from P to Q.

(Continued on next page)



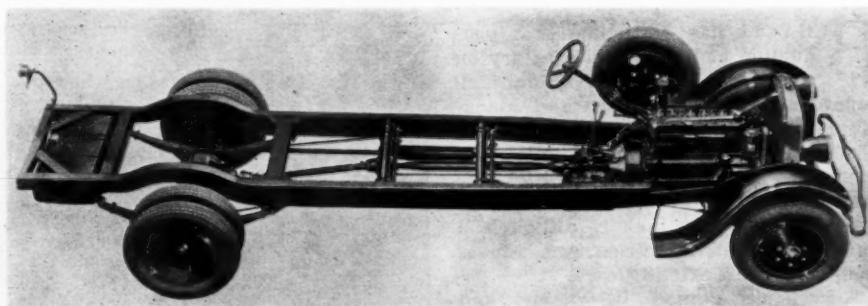
Studebaker Announces Street Car Type Bus on New "75" Chassis

DESIGNED to meet the severe demands of constant starting and stopping and abundantly possessed of power and speed, the Studebaker "75," a new heavy duty chassis for the 21 passenger street car type bus, is one of the latest products of the Studebaker Corporation.

Under the hood of the new Studebaker "75" is the Studebaker Big Six engine, which delivers 75 horsepower. The engine has a positive force feed lubricating system and the chassis is lubricated by a high pressure system. A specially designed one and one-half inch, double-jet, two range carburetor is used. Current is supplied by a 12 volt generator, accessibly mounted at the right forward end of the engine, and by a storage battery. The distributor is at the left front of the engine and the entire ignition system is protected against moisture.

The starter is compact and designed to give many years of service. It is operated by a switch conveniently located on the floor board. A 30-gallon gasoline tank is carried at the rear of the frame and the fuel is fed to the carburetor through a vacuum tank system. A tubular type of radiator, four-blade 20-inch fan and circulating pump system cools the motor efficiently in any temperature and under any load.

The clutch is of the improved double-disk, dry-plate type and the transmission a selective type of four speeds forward and one reverse, is in unit with the clutch and engine. The semi-



Studebaker "75" Bus Chassis

floating rear axle has extra large Chrome Molybdenum shafts. The drive gear is of the spiral bevel type and the load is carried on large roller bearings at wheel hubs and differential.

The torque and drive are taken through the extra powerful springs and the propeller shaft is a heavy steel tube, 3 inches in diameter, turning through three universal joints and with the angle of drive reduced to a minimum because of the low hung chassis design.

The springs are semi-elliptic with 14 leaves in the 36-inch front units and 12 leaves in the 56-inch rear units. Newly designed short shackles eliminate side sway. The chassis is swung low to insure safety.

Extra large mechanical internal expanding four-wheel brakes are used. These brakes are 3 inches wide by 17 $\frac{1}{4}$ inches in diameter and have three expanding shoes which utilize the speed of the vehicle to increase the braking

action. A strong hand lever controls the emergency brakes which operate on the rear wheels. The fenders are made of extra heavy pressed steel. The steering gear is of the cam and lever type, especially designed for balloon tires. Nonskid 34x7.50 full size balloon tires and dual rear wheels are used. Without changing wheels this chassis may be equipped with 32x6 high pressure tires if desired. There is sufficient space between the dual rear wheels to allow chains to be put on or taken off easily.

The new chassis is equipped with speedometer, 8-day clock, engine thermometer, ammeter and oil pressure gage grouped under an oval glass on the instrument board; rear traffic signal light; ignition switch on instrument board; automatic windshield cleaner; rear view mirror; front full width bumper, spare tire carrier and four-wheel brakes.

Warner Hi-Flex Four-Speed Transmission

(Continued from preceding page)

The tail shaft is carried in a large ball bearing at its rear end and in a Hyatt roller bearing at its forward end and the exceptionally short span between these bearings gives it a very rigid support.

Control of the transmission is by the usual cane-type of shift lever. The first speed is obtained by pulling the lever over to the left and pulling it backward; shifting to second consists in pushing it directly forward from the first speed position. Shifting to third involves returning the lever to the central neutral position, pushing it to the right and then backward and, finally, shifting to high is accomplished by merely pushing the lever forward from the third speed position.

In all ordinary driving the car is started on second gear, the first being considered merely as an emergency gear. Owing to the fact that the total reduction in second gear is considerably greater than in the case of an ordinary three speed gear and normal

rear axle reduction, starting in second can be readily accomplished without much slipping of the clutch.

In order to engage the reverse it is necessary to pull up on a latch mounted on the shift lever. This permits of moving the ball handle further to the left than for the first and second speed positions and thus picking up a third shifter bar which controls the reverse gear combination. The reverse position being locked by the latch, it is impossible to engage it by mistake.

The reductions within the transmission are as follows: Low, 4:1; second, 2.46:1; third, 1.42:1 and fourth, 1:1. With a gear reduction in the rear axle of 3.69:1 as used in the Paige eight, this gives the following total reductions: Low speed, 14.75:1; second, 9.1:1; third, 5.25:1 and high, or direct drive, 3.69:1.

A special system of lubrication is employed, which ensures a constant supply to the internal gears and their bearings, which are housed in. The low-speed driven gear, which is of considerable diameter, dips into the main oil bath and constantly splashes oil on the walls of the case. On the left hand wall of the case (from the rear) is

formed a gutter which catches this oil and delivers it into the housing of the internal gear mechanism.

Olds Officials Go to Coast

LANSING, Mich., March 26.—D. S. Eddins, vice-president and general sales manager of Olds Motor Works, accompanied by several other Oldsmobile officials, left the Lansing factory March 25 for the Pacific Coast. His first stop was scheduled for San Francisco where he will hold a dealer meeting starting March 30.

The San Francisco meeting will inaugurate the opening of the spring selling season. It will be attended by dealers throughout the San Francisco branch territory, which includes all of California and part of Nevada. The meeting also will give the dealers an opportunity to inspect the new Oldsmobile branch building, recently opened at 1540 Market street, San Francisco.

Following the San Francisco meeting, Mr. Eddins and his party will visit Los Angeles on April 4, Portland April 6, Seattle on the 7th and Spokane April 9.

Bugatti Offers New Sport Roadster With Supercharger

BUGATTI has just gone into production at his Alsatian factory on a straight eight 140 cubic inch supercharger sporting type and roadster car, for which he claims a top gear performance from $\frac{1}{4}$ to 125 miles an hour. This is the only car in France with a compressor, sold to the public by any important maker, although a number of smaller firms are adding compressors to existing cars.

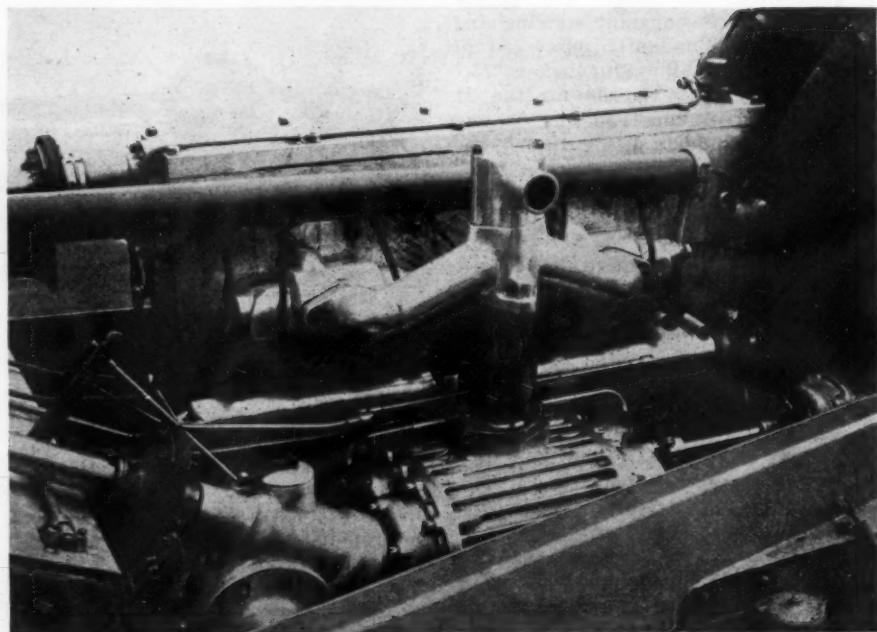
Experience gained in racing and particularly in the Targa Florio event last year has made the production of this car possible. The engine is the racing model, but in order to make the car suitable for general use, chassis dimensions have been increased, the track being 49 inches and the wheelbase 117 inches, and straight side tires of 28 by 4.95 inches are fitted.

With a four passenger closed coupled body the car weighs 2200 pounds. Figures regarding power output are withheld, but the engine is stated to peak at 6000 revolutions. While claiming that this is the fastest stock car on the market, Bugatti maintains that it is also the most flexible, one of his demonstration features being to start the car in high through the electric starting motor and to attain the maximum speed rapidly without the use of the gears.

The engine is a straight eight of 60 by 100 mm. bore and stroke, with cylinders in two castings of four, with a built-up five bearing crankshaft. The two end bearings are spherical balls and rollers are used for the intermediate bearings. Each cylinder has two intake valves and one exhaust, mounted vertically and operated by an overhead camshaft. Connecting rods are I-section in one piece with roller bearings mounted on the crankpins before assembly.

A Roots type blower placed horizontally on the right hand side of the engine is driven from the timing gears by means of a horizontal shaft with two flexible couplings. The blower revolves at engine speed and has the Solex carburetor placed under it and the intake manifold flanged to its upper face. In the head of the vertical stem of the intake manifold is a relief valve to provide for a possible blow back from the engine. Lubrication of the blower is provided independently of the main supply in the engine from a small auxiliary tank on the dashboard feeding by gravity to the two ball bearings, through valves interconnected with the throttle and only opened at a given engine speed. Ignition is by means of a single magneto, mounted on the aluminum dashboard and driven off the rear end of the camshaft by means of a shaft with fabric joints.

Chassis features do not differ ap-



Photograph showing mounting of the Roots type supercharger on the new Bugatti stock engine of 140 cu. in.

precably from other Bugatti cars. The transmission is separate and provides four speeds ahead, with a central lever. Springing is by inverted quarter

25 is now going through and will be followed immediately by a second batch. This is the biggest and most expensive private passenger automobile in the world.



This photograph shows the new Bugatti sport roadster

elliptics at the rear and by simi-elliptics in front, these latter going through the hollow circular section forged front axle, which is delivered nickel plated. Cast aluminum wheels, with eight flat spokes, disposed with a slight helice, so as to direct a current of air on the brake drums forming an integral part with them, are standard fitting. The bodies will be built in Bugatti's own shops and will be close coupled four seaters without running boards, with wells for the passengers' feet, with two doors on the left hand side, with a collapsible top and with one spare wheel mounted on the right hand side. List price of the car in France is 160,000 francs (approximately \$6,400).

First deliveries of the half million franc 200 h.p. straight eight Bugatti are expected to be made towards the middle of this year. A first batch of

Report on Lubrication Oil Experiments

A series of tests just made by the U. S. Bureau of Mines and the American Petroleum Institute, on the range of lubricating oils for automotive equipment, has resulted in the conclusion that good lubricating oils for cars and trucks can be made from crude oil that is not especially refined for this purpose—all with the resultant conclusion that such lubricants will and can be sold cheaper.

There must be some processing, of course, the Bureau points out, "but the experimental work indicates that for use in automotive equipment lubricating oils need not be refined to as high a degree as for use in turbines and similar machinery and as a result considerable savings may therefore be made in present oil-refining processes."

"What is a good lubricating oil?" the Bureau asks, and likewise answers "that a good lubricating oil for an internal combustion engine can be considered as giving good service if it lubricates effectively, if with its use there is minimum danger of lubrication failure, and if its consumption is not excessive."

The READERS CLEARING HOUSE

Questions And
Answers



On Dealers
Problems

Replacement Solutions Protect Radiator

ATTENTION has been called to the fact that the recommendations of MOTOR AGE for anti-freeze mixtures as shown in the curves on page 21 of the Sept. 30, 1926, issue do not check perfectly with the recommendations of the Department of Commerce, Bureau of Standards, Washington, D. C. For solutions above zero, however, the difference is very slight and is probably less than the error made by the average garage man in mixing the solution. Below zero the recommendation of MOTOR AGE is on the side of safety and in the case of denatured alcohol a little more is recommended than is specified by the Bureau of Standards.

The table shown below is obtained from information supplied by the Bureau of Standards and contains a very interesting feature. One difficulty with the use of alcohol as an anti-freeze is that it continually evaporates which makes it difficult to determine whether the protection originally desired is still available. Both the alcohol and water evaporate from the solution, but the alcohol evaporates faster. The table shown below gives percentages of alcohol and water to use in a replacement solution for various degrees of protection. For example at 18 deg. below zero Fahrenheit the original solution would be 50 per cent alcohol and 50 per cent water. A mixture of this sort has nine times as much alcohol evaporate as water. Accordingly the replacement solution should contain nine parts alcohol and one part water. This solution should be mixed in a can and used from time to time to keep the radiator solution up to a certain level, which should be 2 or 3 in. below the overflow in order to prevent loss of anti-freeze mixture when the engine heat causes the solution to expand.

The figures in the table refer to 180 proof alcohol which contains 10 per cent water. If 188 proof alcohol is used, which contains 6 per cent water, then it is possible to use 4 per cent less. This difference is so slight, however, that it would be just as well to use the table as shown. The freezing points

are the temperatures at which crystals first begin to form. The point at which the solution freezes solid may be several degrees lower than the freezing point of dilute solutions and 10 to 15 deg. lower for the more concentrated solutions.

DON'T GUESS—TEST IT

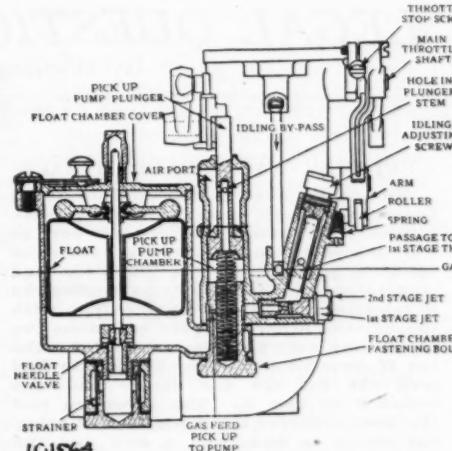
We are having trouble with low oil pressure on a Packard 6, 1924. The gauge shows full pressure when the engine is cold and when it warms up it does not show any pressure at all. All of the bearings on this car have been tightened and new rings installed. We installed a new oil pump the last time the bearings were tightened. It shows fairly good pressure for awhile but has quit showing now.—Queen & Holbrook, 7057 Medbury St., Detroit, Mich.

IN authorized Packard service stations they do not depend on merely tightening the bearings. They run oil under

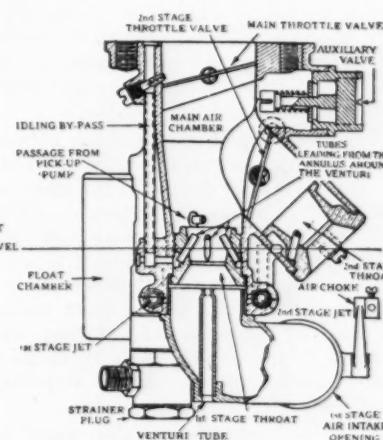
Bad Vacuum Tank Will Cause Galloping

We have a 1922 Big Six Studebaker that gallops badly when running at about 35 miles an hour or faster. It acts just as if the carburetor were too rich. This same car when laboring on a hill will miss and will pull better with the choke partially out. We have put in new rings, refaced the valves, renewed the distributor points, tested the coil and set the spark plugs and have also cleaned the carburetor. We have also put in new intake manifold gaskets, checked the valve clearance, ignition timing, but still have this trouble.—Ohio Service Man.

IN setting the valves on this car the spacing should be exactly .004 of an inch. If you have set it other than this we would suggest that you take care of this setting first. From the way the car acts we would be inclined to check up on the vacuum tank which



Ball and Ball carburetor on 1922 Studebaker



pressure through the oiling system and watch to see how it comes from the various bearings. It should drip slowly from all of them which shows the bearings are properly fitted. The bearing may be tight in one place and yet fitted poorly and allow the oil to leak out badly. Another suggestion is to remove the oil pipe assembly and test it under water by using air pressure to see if there is a leak at any point. More than .003 in. side clearance in the oil pump gears is also likely to cause trouble.

may be flooding and permitting gasoline to go directly into the intake manifold. This could be caused by a leaky or stuck float. When the car is pulling hard on a hill the throttle would be wide open and the manifold suction would be less and consequently it would be less likely that you would draw gasoline directly from the vacuum tank, but on an easy run at about 35 miles an hour the throttle is only part way open and the intake manifold vacuum is relatively high and as a consequence suction on the vacuum tank would be greater and here, if we have a tank in bad condition, it is possible that the raw gasoline would be drawn directly into the manifold. This would give us a very severe case of galloping. We would also suggest that you try another carburetor if possible, as there is a chance that the carburetor is at fault.

Please send me a diagram of the Ball & Ball carburetor.

THE Ball & Ball carburetor diagram is published as requested.

Temperature Fahrenheit	Original Solution Alcohol	Original Solution Water	Replacement Solution Alcohol	Replacement Solution Water
27 above	10	90	60	40
19 above	20	80	75	25
10 above	30	70	82	18
2 below	40	60	87	13
18 below	50	50	90	10

Original and replacement solutions of water and denatured alcohol

Planning Your New Building

A Building with Fire Wall Between Shop and Garage

By Tom Wilder

Am enclosing a sketch of lot 66 by 132 ft. for which I wish to get a plan of a one story garage building. Material to be used is face brick and tile cement floor, roof dome type or high in center curving to height of walls. Showroom to face east, 28 by 64 ft. and balcony to be built in for office. The entire front and 12 ft. on south side to be plate glass with exception of pillars required for support, steel preferred. Plenty of windows in south wall, two or three skylights in roof. The shop in south west corner of building separated from garage by tile wall. Toilet in shop and office room. Boiler room to be located in basement.—Saitta Motor Co., Chippewa Falls, Wis.

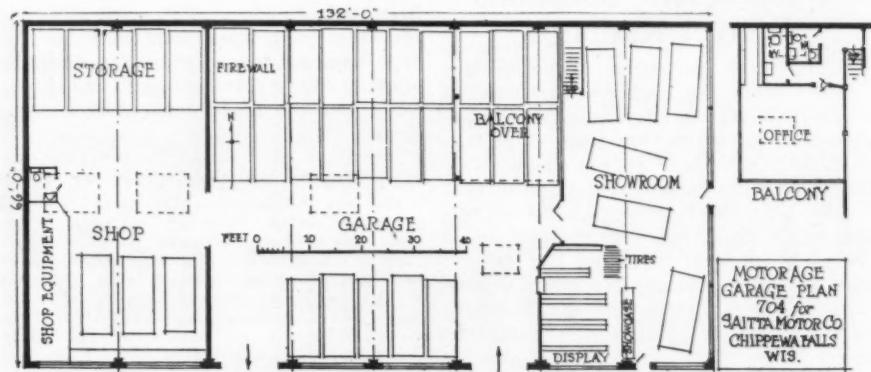
YOU have requested that the shop be placed in the south west corner of the building, but to keep it here and still retain the drive through feature in the garage makes it rather small and placing the two drive way doors any closer together would make it impossible for a car to turn and come out again without backing up. If the three car shop proves too small it is very easy to fit up the other side of this space for three or four cars more with a bench along the back wall.

The two rear bays or section between trusses are a little wider than the others. This is necessary to keep the others 16 ft. apart on centers or a little less and also gives a few feet more width to the shop. The object in keeping the trusses at this distance apart is to make it possible to use 16 ft. rafters in the roof construction. If they were a little further apart than 16 ft. 18 ft. rafters would be necessary and there would be a great waste.

The balcony which you have requested for office purposes has been extended back over the garage and it would be quite possible to handle the stockroom in the same way, thus making the showroom larger on the side street side. It will be necessary, however, if this is done to make the floor higher than it needs to be with the present layout, as the headroom where cars enter the building should be at least 10 ft. while the headroom where cars are stored need not be over 8 ft.

We have indicated a skylight arrangement which we think would be adequate, but if you should install another skylight at the back of the shop it would be advisable to place another skylight back in the corner of the building, as this space would be dependent on skylight entirely for light.

We cannot give you any data regarding rents, but the cost of this building would under average conditions come between \$18,000 and \$22,000. It would be reasonable to base the rental on the cost plus taxes, etc., to give a satisfactory interest on the investment.



This building has unusually large storage capacity for its size and also has well arranged drive through feature in the garage

LEGAL QUESTIONS ANSWERED

By Wellington Gustin

CUSTOMER WANTS DEPOSIT BACK

We had on hand a 1924 Hudson sedan for which there were two prospective buyers. On Sunday afternoon one of the prospects came into our place of business and looked the car over and was taken out for a demonstration by a salesman. While they were out with the car the other prospect called on the phone and said that he would take the car if we still had it on hand. He had seen the car the day before and was satisfied to buy it. The salesman and the first prospect came back after being out about an hour and a half and the prospect was undecided. The manager told the salesman that he had another buyer for the car and that if his prospect decided to take it to get a deposit to close the deal so as to be sure it was sold before the second prospect was told that the car was gone.

The first prospect paid a deposit of \$50 and was given a receipt. There was a verbal understanding that he was to pay the balance of \$650 on the following day. In the meantime the second prospect came in and was told that the car was sold. On the following day the buyer came in and stated that he was still undecided as to whether he wanted the car or not. He came in later in the day and said he had decided not to take the car and would like to have his \$50 back. He was told that he had the balance of the day in which to either pay the \$650 balance or lose his deposit. The next day the manager tried to get in touch with prospect No. 2 to see whether he still wanted the car. Prospect No. 2 was in Pittsburgh looking for a used car. The next day (Wednesday) prospect No. 2, not having found a car to suit him in the city, bought the car. The deal with prospect No. 1 was to have been a cash deal. Prospect No. 2 paid us part cash, part used car and part note. We kept the \$50 deposit

made by prospect No. 1, figuring that the risk we ran in losing prospect No. 2 and our time and trouble selling No. 1 was worth \$50. Prospect No. 1 went to an alderman and got a judgment against us claiming we were keeping \$50 of his money for which he received nothing. At the hearing we took a transcript of appeal. That is as far as the case has gone to date. You have probably an occasion to come in contact with similar transactions and can tell us whether we are justified in keeping the deposit.—Wertheimer Motor Co., South Pittsburgh and Green Streets and 215 West Crawford Ave., Connellsburg, Pa.

YOU are entitled to the actual loss which you sustained by failure of the customer to comply with the terms of the contract. But the courts will not give value to the risk you took in losing a sale to another prospective customer, where there is no actual loss. Presenting such an argument to the court would weaken your case for the court might have suspicion of the substance of the claims. Strictly the court should pass upon only the law and facts presented to it.

From the facts in your letter there appears no question as to a sale having been made by you to customer No. 1, and his subsequent breach thereof. If, in the contract of sale, you agreed that the \$50 deposit was to be retained by you as payment of unliquidated damages then your right to withhold would have been absolute. But where damages can be adequately measured a down payment cannot be retained be-

(Continued on page 23)

Answers to Readers' Questions

Removing Essex 6 Pistons

How can the pistons be removed from a 1923 Essex six? In this engine the bottom part of the connecting rod is so large that it will not go up through the cylinder bore and the counter weights on the crankshaft interfere with removing the pistons through the bottom.—Wisconsin Reader.

WE have been advised from official sources that the pistons and rods are removable from below. In some rare cases the cylinder block casting is not uniform so there is not sufficient space between the crankshaft and the sides of the case to allow withdrawal from below. In these rare cases it is necessary to push the piston up to the top as far as possible. Then with the aid of a torch, carefully heat the piston and remove the piston pin and withdraw the rod from below.

PACKARD MADE IT

On page 25 of the December 30th, 1928 issue of Motor Age there appeared in the Clearing House section an item called "Who Makes this Clutch." The clutch referred to has 13 disks and was fitted with square steel keys. I feel sure it is a clutch used by Packard back in 1913 or 1914.—Tom Plumridge, American School of Correspondence, Chicago.

THIS is correct. We have checked up with a Packard service station

Customer Wants Deposit

(Continued from page 22)

yond the amount of actual damages. If damages are difficult of accurate measurement then the parties may agree upon the amount or evidence must be presented to the court to show the amount of damages. Not knowing what evidence you presented to the court I can only surmise that you failed to show that you were damaged by failure of the first customer to complete the contract. Again I never knew of aldermen as such, giving legal decisions. However, I recognize as a fact that judgments of minor courts are often subjected to political influences and are otherwise unreliable.

On your appeal you should get and present evidence of your actual loss. Where a sales contract as you present is breached you may sue for the breach, proceed to sell the car again, and the difference between the two transactions would establish your actual loss, if any. Had you obtained the same price and terms for the car in each deal, you should be able to recover for the costs of reselling the car. Again if the value of the contract on time can be shown to be less than the cash transaction, that should be claimed as a loss. But you must present proper evidence to the court to show and prove these claims.

and find that this is a Packard clutch. The co-operation expressed in giving us this information is sincerely appreciated.

LET THE SLINGER DO IT

We have a Dodge Brothers car here that keeps throwing oil out of the rear main bearing. Have taken the pan down twice now and put new felt washers in it but it seems to make no difference. The bearing itself seems tight.—A. J. LaFouge, R. 2, Box 7, Camarillo, Calif.

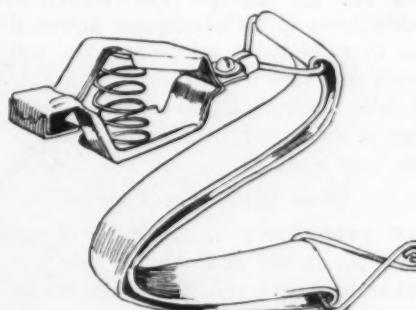
SINCE 1917 the construction of the rear bearing on Dodge Brothers engines has been substantially unchanged. It includes a raised portion on the crankshaft which operates as an oil slinger. As shown in the illustration this permits the oil to be thrown down into the pocket from which a drain pipe carries it back into the crankcase. It would be well to inspect this drain pipe and see that the open end of it is not tight against the pan. This would obstruct the free flow of oil and cause oil to overflow into the flywheel housing. If felt washers have been used around the rear of the main bearing, would suggest that you omit them and merely permit the oil slinger to take care of the excess lubrication.

SHOP KINKS IDEAS

That have been Found Useful

INSTALLING A TIRE BOOT

To hold tire boot in place while replacing tire on rim I use two battery clips connected by heavy rubber band made of old inner tube.—Lloyd J. Halbman, 510 S. Spring St., Beaver Dam, Wis.

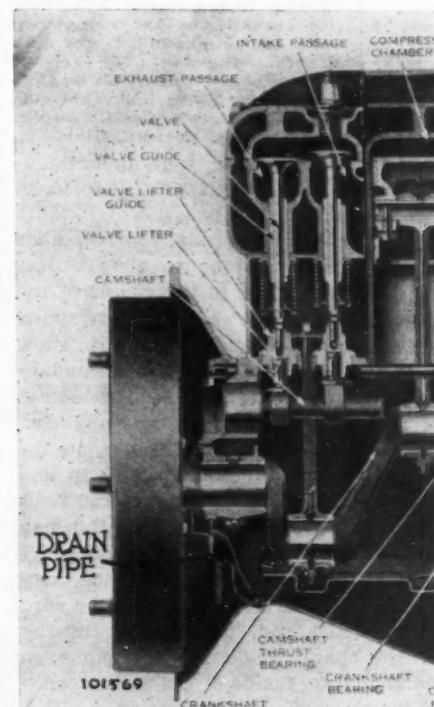


Readers of Motor Age are invited to submit ideas that they have found useful in doing some particular service job in the shop in a better or quicker way. For each one published \$2.00 will be paid. Whenever possible the idea should be accompanied by a sketch or diagram from which a drawing can be made.

Buick Tappets Adjusted with Engine Hot

Is it safe in general to adjust the tappets on both valves on a cylinder after the starting crank has been turned about 30 degrees past the point where the intake valve closed? The Cadillac requires a certain position, but are there many such engines? The one I have in mind is a 1927 Buick Standard Six.—R. M. Jewett, 2013 McGee Ave., Berkeley, Calif.

ANOTHER car is the Lincoln which has a similar camshaft construction. However, on Lincoln cars No. 20406 and later and on Cadillac model 314, that



Oil drain on Dodge

is, everything since the V-63, we find a conventional camshaft construction. On such cars any point on the heel of the cam will do to set the tappet clearance. Buicks have a conventional shape for the heel of the cam but we understand it is common practice to set these with engine running, after engine has been thoroughly warmed up. On Buick the clearance should be .006 in. to .008 with engine hot.

TIMING ON REVERE

How are the valves timed on a four cylinder Revere?—M. Bronte, 5011 New Utrecht Ave., Brooklyn, N. Y.

THE inlet valve opens 7 deg. after top dead center and the exhaust valve closes 11 deg. after top dead center. The tappet clearance on both valves is .005 in. hot.

Clearing Up Electrical Troubles

The Way a Fuelizer Plug Is Fired

We have in our shop a Packard straight eight 1924 car which has been giving trouble for some time fouling spark plugs. We cannot get it to idle without missing. Have had quite an argument which we want you to settle. I said that if you take a wire off of the fuelizer plug and hold it so it will not ground on the engine, the engine will not run. The other boys say it will run. We tried it and it runs, even if you take the fuelizer wire off of the coil. For this reason I claim the secondary must be punctured in order for it to run under these conditions. The spark only jumps a little better than $\frac{1}{8}$ in. on a shorted plug. According to my diagram for this coil the two secondaries are not either one supposed to be grounded and the spark plugs and fuelizer plug are in series. Can you show a diagram so that it will be perfectly plain how this coil is supposed to operate?—Cyril Draper, Palace Model Garage, Detroit, Mich.

YOU are correct in your understanding of the coil circuit. Instead of two secondary windings, however, there is just one winding and the two ends are brought out, one to the fuelizer plug and the other to the center of the distributor. In the sketch we are showing, arrows have been indicated to show how the current from the secondary would flow, going out to the center of the distributor and then being carried to one of the spark plugs on the engine and then jumping this gap and passing through the engine to the fuelizer spark plug, then jumping this gap in order to complete the return circuit to the fuelizer terminal of the secondary winding. With the fuelizer wire disconnected and hanging out in the air the spark would have to puncture the insulation inside of the coil in order to complete the return circuit.

After this happens it is quite likely that the paper and insulating material inside of the coil will be so burnt and carbonized as to make a good ground connection or at least one that a spark will jump at the fuelizer terminal of the secondary winding. Then when you replace the wire on the fuelizer plug it will probably happen that the return spark coming from the engine will not jump at the fuelizer plug, but will continue to jump inside of the coil. This would doubtless cause the trouble you experienced as it would put the fuelizer out of commission. In testing a coil of this kind on a test bench it is not enough to see that a good spark is obtained from one secondary wire to another. Two spark plugs should be used and each gap should be opened to about $\frac{1}{16}$ in.

The two plugs should be connected

Edited By A. H. Packer

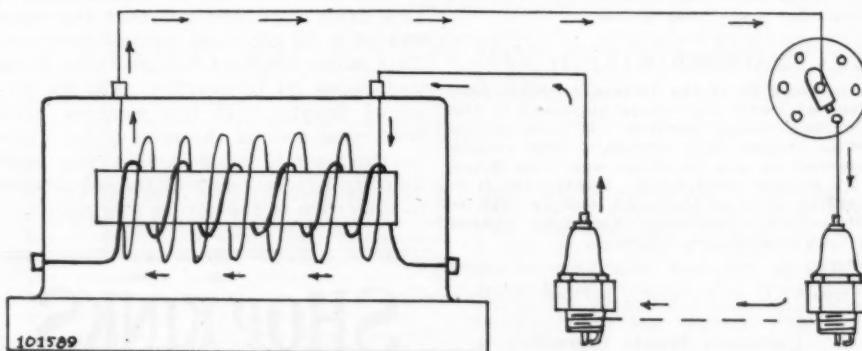
together, that is, the shell of one grounded to the shell of the other. There should also be a connection from the spark plug shell back to the primary circuit or to the battery being used in making the test. Then the two secondary wires can be run to the two spark plug terminals. If the coil is good, sparks will jump at both plugs, but if it is defective only one plug will fire. There is another electrical possibility of getting a faint spark when there is no return metallic circuit. This is due to static electricity. For example, you can take a spark plug wire and let it hang out in the air while the engine is running.

Then hold a screwdriver blade near

Installing a Cutout on 1924 Oldsmobile

On page 26 of the March 3rd, 1927, issue of MOTOR AGE you showed a wiring diagram of a model 6B Premier car with the circuits changed so as to include a cutout. I noticed that you have the cutout grounded from the field coil. I have a 1924 Oldsmobile on which the generator was formerly direct connected to the switch. I took a regular Ford cutout and connected same just as it is installed on the Ford car. Tell me at once if I have same connected right, and whether it must be grounded as you show in your sketch. What harm will it do if it is connected as I have it.—MOTOR AGE Reader.

THE cutout terminal which is marked G does not stand for ground, but stands for generator. This generator terminal is connected to the live brush



Coil used with Packard fuelizer. The secondary is not grounded

this live wire and faint sparks will jump to the screwdriver blade and yet you know there is no complete metallic return circuit. Accordingly it might be possible for an engine to fire after it is once started even if you disconnected the fuelizer plug and the coil did not short. The insulation would have to be very good, however, and in most cases we believe the coil would puncture itself and after that be of little service as far as the fuelizer plug is concerned. The static spark is also very weak.

Clean Carburetor Tube

On your particular job there is another possibility and that is that the carburetor body suction tube is clogged up. This tube leads from the base of the spray mixing tube around the carburetor into the intake manifold, and its function is to prevent loading of the engine when idling. Accordingly if you do not solve the problem by means of a good coil would suggest cleaning out this carburetor tube.

or insulated brush and to this same connection we have a lead from the shunt field. The series of lines, each one shorter than the one above it, stands for ground or a connection to any metal part of the engine or generator. Referring to the diagram in the March 3rd issue you will see that the base plate of the cutout is grounded. This applies to your Oldsmobile as well as to the Premier. On the Oldsmobile there was a wire from generator to the No. 2 terminal on the switch. This wire should be disconnected from the No. 2 terminal and connected to the G or generator terminal of the cutout. The B or battery terminal of the cutout should connect to the No. 1 switch terminal which has a wire running to the ammeter. Then the base plate of the cutout must be connected to the engine, that is, grounded. If you do not have the cutout connected as described it will probably not cut in. We trust that from this description, however, you will be able to check up your connections.

Answers to Readers' Questions

Wrong Timing Makes Engine Logy

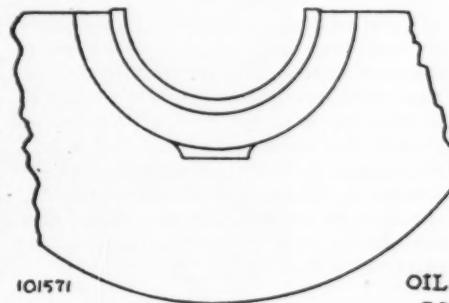
We have a 1923 Jordan 6 cylinder model MX car in our shop which acts logy, and will not run over 40 miles per hour. Advise proper procedure for checking valve and ignition timing. In repairing and overhauling the engine some time ago we replaced the chain at the front end of the engine. The only indications on the sprockets were two punch marks with 10 tooth spaces on the chain between them. The engine has a roar to it with no apparent power or speed.—A. G. Schwarz, 355 Saxton St., Rochester, N. Y.

WE are showing an illustration of the front end of this engine. The camshaft sprocket is called G, while the crankshaft sprocket is called H. The two punch marks you refer to are known as L and M. In replacing a chain these sprockets should be set as shown in the illustration and there should be eleven pins between these marks or a distance of $5\frac{1}{2}$ in. Perhaps this is the trouble with your engine as you mention ten links instead of eleven. It would be well to check the distance of $5\frac{1}{2}$ in. as well as the number of pins. We assume that you have the chain installed with arrows showing. They should have their heads going in the direction of chain travel.

You can also check the timing by turning the engine over by hand until No. 1 piston is at top position. The exhaust valve should close 8 deg. past top center and the intake valve should open 12 deg. past top center. This corresponds to moving the starting crank handle about $1\frac{1}{4}$ in. further than the dead center position to give the instant at which the exhaust valve should close or about $1\frac{1}{8}$ in. past dead center to give the position at which the intake valve should open. This is on the basis of a 9 in. starter crank. This should be near enough to check up your

chain setting.

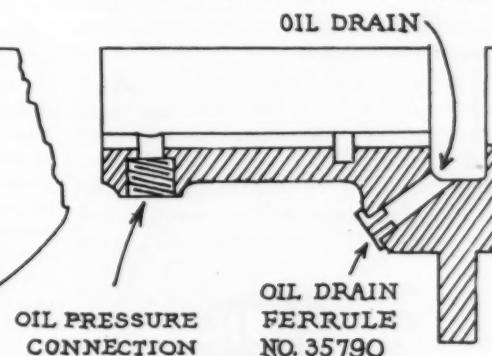
To check the ignition, set the spark lever in the fully advanced position. Then remove the distributor cap. Turn the engine over until the number one piston is $3\frac{1}{2}$ in. on flywheel ahead of upper dead center in the firing position. This position is marked with spot punches on the flywheel. After loosening the adjusting screw in the center of the cam, turn the rotor or high tension distributor arm in the distributor, and also the cam, in the direction of rotation until the rotor button is under the No. 1 high tension terminal on the distributor head. At the same time check to see that the breaker points are just ready to open.



Keeping the Oil Where It Belongs

We are having considerable trouble with a 1924 Maxwell leaking oil out of the oil pan into the transmission housing. The bearings are O. K. The oil return hole in the rear bearing has been increased to $\frac{1}{4}$ in. with no improvement. Oil pressure is 30 lbs. when cold and 26 when warm. Can you suggest remedy?—A. & W. Garage, R. F. D. 3, Monroe, N. C.

AS the clutch is just at the rear of the engine we assume that you refer to leakage into the clutch housing. We are showing sketch which illustrates the proper construction for the

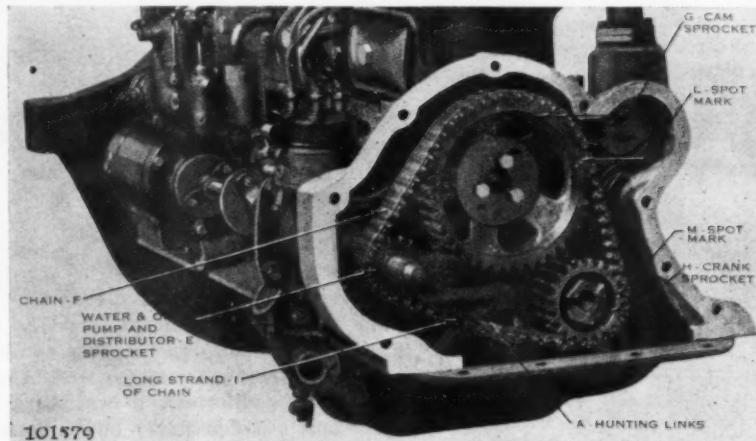


Drain pipe on Maxwell may be used in place of ferrule shown

Then remove the rotor and tighten the screw to hold the cam in this position. With compression released in each cylinder the ignition switch could then be turned on and the timing checked by turning the engine over by hand to see that the interrupter points open with spark lever advanced at the instant the ignition timing mark on the flywheel is opposite the indicator. With good compression and with valve and ignition timing right you should get full power and speed from this engine.

oil drain hole at the rear of the rear main bearing. In the older type bearings there was a hole about $\frac{1}{8}$ in. in diameter. In later bearings this hole was made $\frac{1}{4}$ in. in diameter approximately, but merely enlarging the hole does not make the oil drain satisfactory. When the hole is enlarged it is found that the pressure in the crankcase blows the oil back into the bearing and causes it to leak into the clutch housing.

The remedy is to use Maxwell part No. 35740 which is a ferrule used as indicated in the sketch. This permits pressure to get to the oil and at the same time allows oil to drain back into the crankcase. Another remedy is to use a pipe instead of the ferrule and have the pipe run from this oil drain hole to the lower part of the crankcase so that the lower end of the pipe is below the surface of the oil in the crankcase. In this way capillary action seems to more than offset the effect of crankcase pressure. It is essential that the bearing metal be trimmed from the surface of the cap so that an oil tight joint can be maintained.

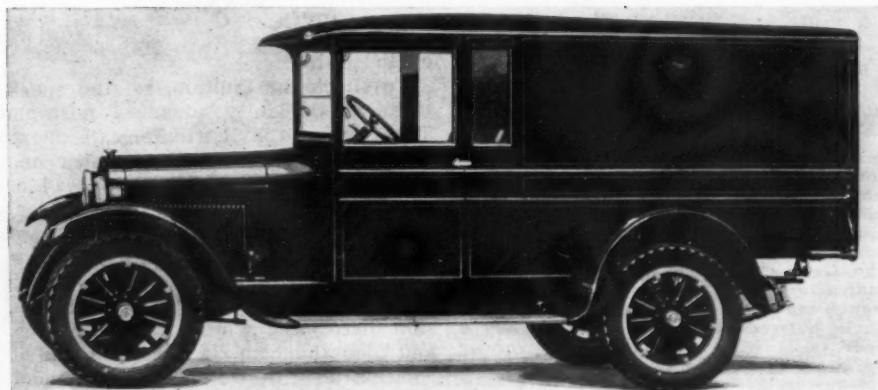


Front of 1923 Jordan engine showing timing marks

Interchangeable Bodies on $\frac{3}{4}$ Ton Graham Brothers Truck

CONVERTIBILITY of body types is a feature of the redesigned $\frac{3}{4}$ ton commercial cars recently introduced by Graham Brothers, the truck and bus division of Dodge Brothers, Inc. This model is offered in four body styles, panel, canopy, screen and express, body parts for all four bodies having been standardized as far as possible to simplify production. Built integral with the body, the cab is fitted with all steel doors with drop windows operated by crank type regulators. Individual cab seats have folding lazybacks to permit passage into the load compartment. Panels on all types are constructed sheet metal over wood, padding being inserted between the two for the purpose of eliminating rumble. Full length roofs are provided on all models except the express type.

In the panel delivery, the upper panels are of the same construction as used in the lower panels, adjoining edges being coated with a plastic material in assembly to prevent dust and water penetration. As mentioned, bodies are completely convertible, those por-



Double belt lines, appearance of greater length and reduced height, and metal covered body panels characterize the new panel delivery body on the Graham Brothers $\frac{3}{4}$ -ton chassis

tions not common to all types being shipped to dealers as special assemblies so that they may convert one type to another when necessary, following Graham Brothers practice with their one to two ton models. Convertible bodies permit the carrying of smaller stocks by dealers. In addition, where an owner desires to change a body style the conversion can be made by the dealer at a reasonable cost without scrapping the existing body.

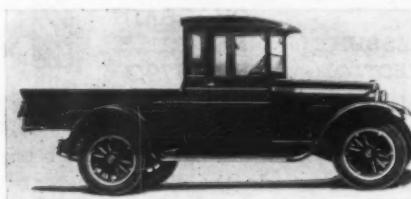
Hold Nash Service Clinic

TORONTO, Ont., March 28.—The "Service Clinic" idea was introduced in Canada recently when Breay-Nash Motors Limited of this city gathered about 50 mechanics from the Nash dealer organization in Ontario for a two-day convention in Toronto. The best maintenance methods were thoroughly discussed and many valuable suggestions made direct to the men who do the actual service work on Nash cars. Morn-

ing and afternoon sessions were held on the two days and luncheon served on the premises.

New Pontiac Cabriolet

THE sport cabriolet which was recently added to the Pontiac line. This car is finished in Cherokee gray with orange striping. Top and fenders are in Brevoort green. The rumble seat is reached by two aluminum steps on the right side of the car. The list price is \$835.

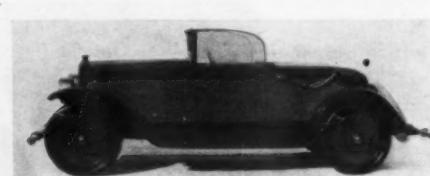
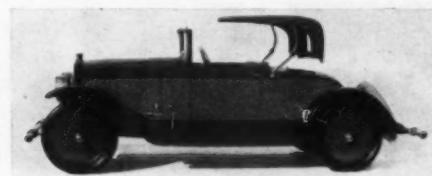
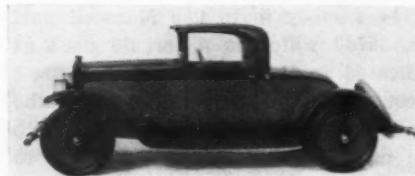


On the new express type body for the Graham Brothers $\frac{3}{4}$ -ton model the top can be replaced with the full length top used on the other models, reducing the amount of work in changing bodies on the same chassis



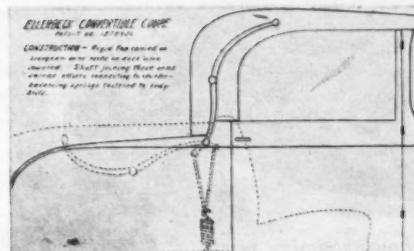
The Pontiac Sport Cabriolet Which Lists at \$835

A Substantial Convertible Coupe Body



THESE photographs show the stages of operation of the convertible coupe body made by B. B. Ellerbeck of Salt Lake City, Utah. In this coupe the upper structure is of metal and instead of folding it swings back and nests over the rear deck.

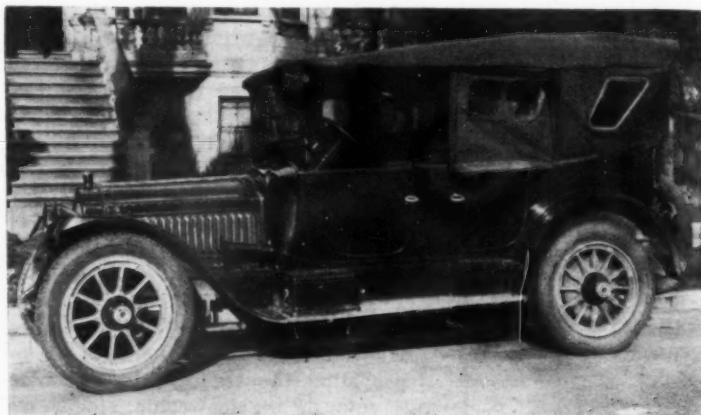
The first photograph shows the top up with windows raised. The second photograph shows the windows lowered



and the top in process of being lowered. In the third photograph the top is in its resting place over the rear deck and the windows are up to serve as side shields. This design has been considerably improved since it was first brought out by Mr. Ellerbeck a few years ago. The small sketch shows how a counter-balancing spring is used to make it easy to raise and lower the top.

Another Monumental Development to the Credit of Our Industry

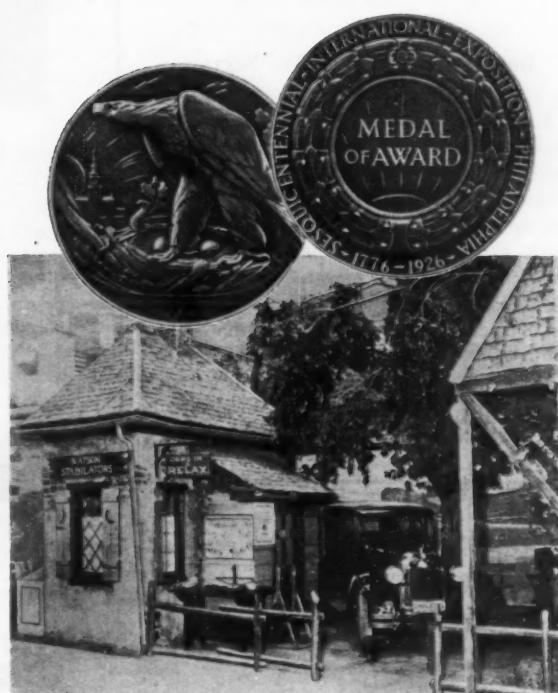
THE CARQUINEZ STRAITS HIGHWAY BRIDGE which will be placed in operation in May, is said to be greater than the East River bridge, overshadows the mighty Philadelphia-Camden bridge and larger than the famous Quebec bridge. It is nearly a mile long over one of the branches of San Francisco Bay and the 7 in. concrete roadway, 30 ft. in width, will accommodate 3 large trucks or 4 cars abreast. It will eliminate the present ferry necessary to approach Oakland from the north and greatly simplify through traffic from north to south



PACKARD TWIN SIX TOURING CAR used by four California governors—Governors Hiram W. Johnson, W. D. Stephens, Freind W. Richardson and C. C. Young. The latter replaced it last week with a new official car



M. ETTORE BUGATTI the French automobile manufacturer has built an exact duplicate in miniature of the 91½ in. Bugatti racing car for his 4-year-old son. It is fitted with batteries and electric motor, however, instead of internal combustion engine. It has cast aluminum wheels and 4 wheel brakes and is otherwise a regular buss



GOLD MEDAL TO WATSON STABILATORS by the Sesqui-Centennial International Exposition "for excellence of product and originality of exhibit." It has been suggested that a booth that would draw the gold medal might furnish inspiration for a good window display

SOME NEW ACCESSORIES TO SELL

Lincoln Kitchenette

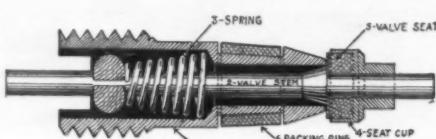
MOTOR tourists will be interested in the Lincoln kitchenette, which is a metal cabinet for carrying necessary food stuffs on camping or picnic trips. The kitchenette contains a refrigerator compartment which will carry 25 pounds of ice and maintain the refrigeration for 24 hours. It also has compartments and drawers for carrying canned and package foods and other groceries. The kitchenette is clamped on the running board of the car and the door opens down with drop legs, forming a convenient table. The refrigerator compartment has separate insulated doors so that the kitchenette may be opened and used without sacrificing refrigeration. The outside size of the cabinet is 22x32x10½ inches. It is manufactured by the McGrew Machine Co., Lincoln, Neb.

Gacor Stop-It

THE Gacor Stop-It is a device that can be easily spliced into the stop light wiring and which causes the stop light to flash on and off when the brake pedal is depressed. This flashing action is intended to make the stop light more noticeable to the driver behind. The Stop-It device may also be spliced into wires leading to a radiator light or any other lights on the car. The price is \$1.50 and the manufacturer is General Appliance Corporation, 120 Eighth St., San Francisco, Cal.

Belden Wire and Cable Service

A COMPLETE line of replacement battery cables and terminals has been added to the products of the Belden Mfg. Co., 2300 S. Western Ave., Chicago, Ill. This company is providing a new service rack which carries both spool wire and battery replacement cables for convenient sale and service. The dealer selects his own assortment for use with this rack. The Belden Co. also provides the Belden Service Manual, which gives useful information, tables and specifications for the correct wiring of all cars.



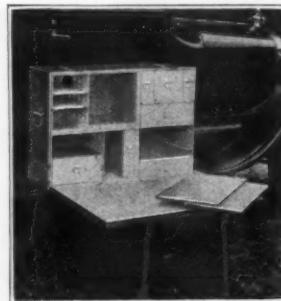
Empire Valve Inside

Arco Auto Glazing Dum Dum

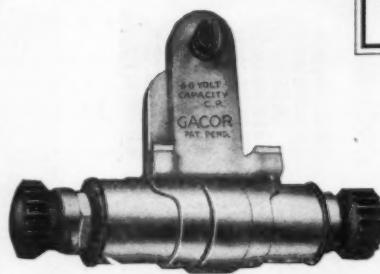
ARCO auto glazing Dum Dum is a product of The Arco Co., Cleveland, O., and is being distributed by Sommer & Maca Glass Machinery Corp., Chicago, Ill. This compound is used for glazing windshields and plate glass windows in automobile bodies and is said to be unaffected by the most extreme changes in temperature. It is waterproof and remains plastic under the film. It is said that glass set with this compound stays put and will not rattle under the stress of continued vibration and jar.

Empire Valve Insides

A NEW valve inside with body made of brass in one piece has been placed on the market by the Empire Sales Co., Bridgeport, Conn. The spring is entirely enclosed in the body and the seat cup is made from solid brass rod. Price 30 cents a box.



Lincoln Kitchenette



Gacor Stop-It



Visionall Windshield Cleaner

Gemco All-Purpose Lamp

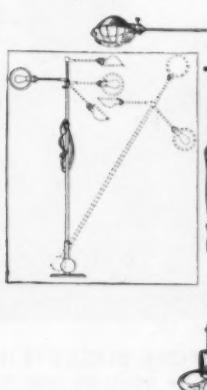
A NEW portable lamp which is said to be universally adjustable to any position and especially adaptable for garage use, is being offered by the Gemco Mfg. Co., Milwaukee, Wis. The lamp may be tilted at any angle on the base, the counter weight balancing the lamp so that the center of gravity of the device is always within the confines of the base, avoiding tipping over. It can be extended to 9 ft. in height, throwing the light over the car, and brought down flat, throwing the light under the car. Prices to dealers are \$16 finished in black or \$18.50 finished in nickel.

Visionall Windshield Cleaner

VISIONALL is a new windshield cleaner which has two blades in vertical position, each operating over one-half of the windshield so that the entire glass is kept clean during a storm. The device is air driven and when it is stopped the two blades move together to the left-hand side of the windshield and remain stationary. It is manufactured by the Trico Products Corp., Buffalo, N. Y., and the price is \$12.50 complete with all attachments.

Battery Cable Stocks

THE Ohio Parts Co., Cincinnati, O., is providing the trade with four new unit sets of service cable stocks as follows: No. 1, Chevrolet; No. 2, Overland, Willys-Knight and Whippet; No. 3, Dodge Brothers cars and Graham trucks; No. 4, Ford cars. The price of each of these stocks is \$13, including a wall rack upon which the cables may be placed for convenient access.



Gemco All-Purpose Lamp

DEALER STOCKS BELOW YEAR AGO

Trade's Supply of New Cars Is at Good Level

March Production Outside of Ford Might Exceed Period of 1926

DETROIT, March 28.—Indications are that March production for all manufacturers considered as a group, outside of Ford, will at least equal if not exceed March of a year ago and the demand for cars is such that the industry will no doubt enjoy a steadily rising production for at least the next 60 days.

All units of General Motors, Chrysler, Hudson-Essex, Reo, Hupmobile, Packard and Studebaker, in the Michigan district, are reported operating on large schedules while Willys-Overland at Toledo is indicated as unusually active. Production was also resumed this month on a substantial scale in Durant's Lansing factory.

Reports from various parts of the United States indicate that the early spring weather has acted as a great stimulus for sales and various producers are finding their resources taxed to take care of the demand for cars.

A study of production figures and retail sales for the past several months would indicate that dealer stocks are lower than a year ago. As a result of a sharp curtailment in production by practically all producers during November and December it appears that dealers were afforded the opportunity of bringing their stocks to a very favorable level early this year and this condition will now reflect back in increased production schedules.

Ford's output still continues on a greatly reduced schedule and while the industry has heard all kinds of rumors about price cuts and new models, it is taken for granted that the Ford organization is planning on introducing an improved Ford car at some later date.

Announcement by W. C. Durant that he will have something important to reveal April 7 has also started a flood of rumors about this particular producer.

Dealers Named D.B. Directors

DETROIT, March 28.—Dodge Brothers, Inc., announces the election to the board of directors of two dealers, C. Russell Dashiell of Chicago and Samuel S. Thornton of Philadelphia. They succeed C. M. Bishop of Brooklyn and F. S. Albertson of Los Angeles, both Dodge Brothers dealers.

Election of Mr. Dashiell and Mr. Thornton is in accordance with Dodge Brothers' policy of giving dealers direct representation in the company. The

plan calls for the rotating in office of the dealer-directors from year to year so every section of the country will be represented.

Mr. Thornton is identified with the Thornton-Fuller Co. of Philadelphia. His 1914 contract called for the delivery of 400 cars. Last year the contract specified 7800 cars for delivery.

Mr. Dashiell is president of the Dashiell Motor Co. of Chicago. His total sales the first year were 900 cars, while in 1926 the Dashiell Motor Co. delivered 9600 cars.

Improvements for Peerless Six-72

CLEVELAND, O., March 26.—Improvements in the engine, body and equipment of the Peerless Six-72, which will serve to greatly increase its popularity in its price class, were announced this week by Charles A. Tucker, general sales manager of the Peerless Motor Car Corporation.

The most notable improvements will be the use of the Ross cam and lever steering gear, Timken bearings in the transmission, Nelson new type pistons, and the radiometer on the dash, with the new Peerless Eagle head radiator cap. Many refinements have also been made in body finish and trim.

Pickup Follows Price Cut

DETROIT, March 26.—During the first 10 days after Packard reduced the price of three Packard six models \$335, the company enjoyed an increase in deliveries of 246.5 per cent, compared with the last 10 days of February, according to a statement issued by the company.

Ship 28 Cars of Tractors

MILWAUKEE, March 26.—The Milwaukee works of the International Harvester Co. has just made the largest single shipment of farm tractors, consisting of 28 carloads, containing 112 machines, that has been ordered in two years or more. The tractors are destined for Billings, Mont., where distribution to wheat ranches will be made. While tractor orders from the southwest have been comparatively good in recent months, this is the first substantial order received from the northwest, and therefore is considered significant of general improvement in the agricultural situation.

Two New Body Styles On Gardner 80 Chassis

St. Louis Manufacturers Add Victoria Coupe and a Brougham Coupe

ST. LOUIS, March 26.—Two new bodies announced this week on the Gardner 80 chassis are the Victoria coupe and the brougham coupe. The Victoria coupe seats four passengers with a staggered seat arrangement. The driver's seat is stationary, and alongside it is an occasional seat which may be folded completely out of the way when not in use. The rear seat has room for two with a spacious luggage compartment behind it. Body, hood and cowl of this model are finished in blue, with panel and wheel in cream, and fenders, apron and chassis in black.

The brougham coupe has a stationary seat and folding seat in front and a wide seat across the back, accommodating three persons. The body, hood and cowl of the brougham coupe are finished in gray, the panel and wheels in red and the fenders, apron and chassis in black. Unusually complete equipment is provided on both models.

Sam Miles Recovering

NEW YORK, March 26.—Sam A. Miles, show manager of the National Automobile Chamber of Commerce, has been undergoing treatment at the Harbor Sanitarium here and is recovering rapidly.

Plan to Buy Tire Plant Denied

NEW YORK, March 26.—Reports actively circulated recently to the effect that a leading motor car manufacturer had acquired, or was negotiating for, a tire manufacturing company are denied by a high official of the automobile company involved in the reports.

Doubt is expressed in the trade generally that such a move would be advantageous, due to the very low prices which the factories have been able to obtain through the competition of independent tire companies for original equipment business.

New Passenger Car Models in MOTOR AGE Prices And Weights Tables March 31st

Make	Model	Body Style	Old Price	New Price
Davis	Series 98	Touring	New Model	\$1795
Davis	Series 98	Polo Roadster	New Model	1795
Davis	Series 98	Princess Coupe	New Model	1865
Davis	Series 98	Emperor Sedan	New Model	1885

1500 Tradesmen Attend A.E.A. Rally at Dallas

Dealers Are Urged to Give Greater Attention to Equipment Profits

DALLAS, Tex., March 28.—Close to 1500 automotive retailers and others identified with the trade attended a spirited merchandising meeting here at the Baker hotel which was held under the auspices of the Automotive Equipment Association with the cooperation of the Automotive Appliance Company, the Ferris-Simpson Company, the Hans Johnson Company and the Schoelkopf Company, A. E. A. jobbers.

Ray Simpson served as chairman of the meeting and the principal speakers were Ray Shelton, Chevrolet distributor; George A. Brusch, special merchandising representative of the A. E. A.; and Pat Davis, president of the Texas Auto Dealers' Association.

Mr. Shelton said automotive dealers should pay more attention to the sale of approved accessories as the equipment end of the business is the most profitable. Mr. Brusch pointed to the advantages that the jobber and dealer can realize through the enlarged A. E. A. merchandising program.

F. H. Floyd of the McCauley-Ward Motor Supply Co., and Mr. Brusch addressed another large gathering of tradesmen in Waco which drew dealers from a wide area. Sponsors of this meeting were the Clifton Mfg. Co., the Archenhold Automobile Supply Co., the Herrick Hardware Co., the McCauley-Ward Co., the McLendon Hardware Co. and the Miller Co., Inc.

940 Studebaker Shipments in Day

SOUTH BEND, Ind., March 25.—A new high record for a single day's shipments was established yesterday by Studebaker plants when 940 Studebaker and Erskine cars were shipped from the Detroit, South Bend and Waterville factories. This figure exceeded the previous record of 752 cars in a single day established Feb. 28, this year. The increase in Studebaker and Erskine shipments is said to have been brought about by a widespread demand of dealers over the country whose deliveries to consumers for the first 15 days of March show an increase of 26 per cent over deliveries for the same period in 1926.

To Hold Spring Opening

NEWARK, O., March 26.—A. C. Faeh, secretary of the Ohio Council of the Newark Automobile Dealers' Association, aided in the organization of the Newark Automobile Dealers' Association. The first activity of the new association will be the holding of a combined spring opening the week of April 4 when all show rooms will be

Represents A.E.A. on the Pacific Coast



George Brosch

Assigned to the Pacific Coast and with headquarters in San Francisco George Brosch has been appointed special merchandising representative of the Automotive Equipment Association. Mr. Brosch, who began with Goodyear Tire & Rubber Co. in San Francisco 13 years ago, has had wide merchandising experience. In recent years he has been western sales manager for the Electrical Research Laboratories while besides his Goodyear connection he handled sales for Universal Transmission and served as western sales manager of the Hassler Shock Absorber Company. He has given much attention to problems of the dealer and shopman.

uniformly decorated and new models shown. Officers of the new association are: President, Lester Newkirk; vice-president, Ray Matticks; secretary-treasurer, Edward Owens.

Making New Essex Speedster

DETROIT, March 28.—Hudson Motor Car Co. is in production on its new Essex two-passenger speedster model listed at \$700. Equipped with a higher rear axle ratio than other Essex models the Speedster is guaranteed to do 70 miles per hour. Equipment includes engine thermometer, dash gasoline gage and rear traffic signal.

Mrs. Strom Dead

DETROIT, March 26.—Word has been received here of the death at Miami, Fla., of Mrs. Carie A. Strom, 75 years old, widow of the inventor of Strom ball bearings. The body will be taken to Chicago for burial.

Registration 22,001,393 Is U. S. Bureau's Figure

Put Gain for All Types at 10.3 Per Cent Above Total Year Earlier

WASHINGTON, March 30.—Registration of automobiles in the United States, as of January 1, this year, totaled 22,001,393, according to registration figures just compiled by the U. S. Bureau of Public Roads, and made public here.

Of the total number registered, 19,237,171 were passenger automobiles, taxis and buses and 2,764,222 were motor trucks and motor road tractors. The increase of motor trucks and road tractors amounted to 13.2 per cent compared with January 1, 1926, while the registration of all types during the year amounted to 10.3 per cent, or slightly more than 2,000,000 more than that of January 1, 1926.

Florida with an increase of 40.2 per cent, not including nonresident registrations, shows a greater gain than any other state. Oklahoma, with a gain of 17.8 per cent, and second only to Florida in respect to the amount of increase, was followed by Alabama, Idaho, Louisiana, Mississippi and Utah, all of which had increases over 15 per cent.

Receipts from registration fees, licenses, etc., amounted to \$288,282,352 as compared with \$260,619,621 in 1925. Of the gross receipts \$190,406,060 was available for highway construction under the supervision of the state highway departments, \$51,702,000 was allocated to counties for expenditure of local roads and \$25,274,000 was used to finance highway bond issues.

Blunden Olds Chicago Manager

CHICAGO, March 28.—Appointment of L. J. Blunden as manager of the Chicago branch of Olds Motor Works is announced by D. S. Eddins, general sales manager of Olds Motor Works. Mr. Blunden was assistant to and succeeds Charles H. Hurst, who died recently.

Mr. Blunden takes over his new activities with an experience of 20 years in the automobile business. He started with the old U. S. Motors as territorial representative in Detroit in 1907 and later held various executive positions in Pittsburgh and in Cincinnati. In 1922 he joined the Oldsmobile organization as assistant manager of the W. V. Faunce Motor Co., then Oldsmobile distributor in Chicago. When the Faunce business was acquired by Olds Motor Works and a Chicago branch established in July, 1925, Mr. Blunden was engaged by the branch for the same position he held while with the Faunce company.

Open Million Dollar Garage With "Hill Climbing" Contest Up 20 Ramps

WASHINGTON, March 28.—Washington's new \$1,000,000 garage, declared to be the finest in the East, was opened with a novel stunt that secured for it columns of newspaper publicity and much popularity. The structure covers half of a large block, is ten stories high and the top is reached by 20 ramps.

Each automobile agency in the city was invited to participate in a "hill climbing" contest, the hill being the ten stories via the 20 ramps. A crowd of several thousand watched the demonstration and listened to a band as each

car made the 1,500 foot climb. More than 40 cars were entered, the winner being a Peerless, entered by the Peerless Motor Car Company, which negotiated the distance in 1:34 minutes, with a model 6-90. Two other cars tied for second place, with a time of 1:42 minutes, being a Gardner and an Oakland.

The garage will hold 1200 cars in dead storage in addition to ample space for live storage. The general managing of the concern is under Hanson E. Ely, son of Maj. Gen. Ely, head of the United States Army College.

To Build Automobile "Hotel"

BIRMINGHAM, Ala., March 28.—The National Garages, Inc., of Detroit, Mich., have announced that a company has been formed in Birmingham which will build a seven story automobile hotel at a cost of approximately \$750,000. There will be six floors for car storage and the seventh for the service department. Ed S. Moore is president of the company.

Nielson Succeeds Campbell

HARTFORD, Conn., March 26.—Arthur A. Nielson was elected president of the Hartford Automobile Dealers Association to succeed Major Thomas W. Campbell; F. W. Williams was elected vice-president; and H. C. Hine was elected treasurer to succeed Dwight A. Burnham who held that office for several years past. Arthur Fifoot was reelected secretary.

20 Per Cent Business Gain

TOWSON, Md., March 28.—S. Duncan Black, president, has announced that the total billing of the Black & Decker Manufacturing Company for the months of January and February of this year show a 20 per cent increase over the same period in 1926. Mr. Black has expressed himself as confident that the company will close the year of 1927 with a total business 25 per cent in excess of that obtained in 1926.

Larger Gardner Sales

ST. LOUIS, March 28.—The Gardner Motor Co., Inc., reports an unusually heavy volume of retail business during the first two months of the current year. From January 1, 1927, to February 25, 1927, the factory announces, retail sales of the Gardner Eight-in-line were 38 per cent greater than those of the same period in 1926.

LaSalle Sales Chief for Lee

SAN FRANCISCO, Cal., March 28.—With the presentation of the LaSalle car by Don Lee, Cadillac distributor here and at Los Angeles, announce-

February Production in Canada Up 25 Per Cent

Rate of Gain Over January About Same as for the United States

WASHINGTON, March 28.—Automobile production in Canada for the month of February totaled 14,826 passenger cars and 3,829 trucks, as against 11,745 passenger cars and 3,601 trucks produced in the dominion during January, according to telegraphic information received this week by the United States Department of Commerce.

The increase in the Canadian production of approximately 25 per cent in February over January is about the same ratio as the increase in the American production.

A comparison of January and February production totals in the two countries is shown below:

	Jan.	Jan.	Feb.	Feb.
	Cars	Trucks	Cars	Trucks
U. S.	196,973	37,169	260,330	38,029
Canada.	11,745	3,601	14,826	3,829

Totals 208,718 40,770 275,156 41,858

Thus the combined car and truck production in the two countries during February was 317,014 against 249,488 in January. This combined output in February 1926 was 367,985, comprising 334,524 cars and 33,461 trucks.

New Reo Line Coming

DETROIT, March 28.—Rumor that Reo will bring out a car to compete in low priced six field has been definitely settled by an official of the Reo Motor Car Company in a statement to the effect that a companion car to the Flying Cloud will be announced to the public May 6. The car is to sell in the \$1200 price class and will be powered with a six cylinder three and one quarter inch bore engine developing 55 horsepower and equipped with a seven bearing crankshaft.

Cedar Rapids Dealers Elect

CEDAR RAPIDS, Ia., March 26.—L. M. Millsap, president of the Millsap Motor company, was elected president of the Cedar Rapids Automobile Dealers association at their annual meeting. Edward L. McKibben, McKibben Motor company, was elected vice-president, and Glenn O. Fletcher, Rapids Chevrolet company, secretary-treasurer.

Regional Manager for Reo

SAN FRANCISCO, Cal., March 28.—E. A. Smith has been named manager for all Reo activities in northern California, according to announcement by Herbert E. Woodward, president of the Reo Motor Car Company of California. Mr. Smith joined the local Reo organization in 1921 as auditor and office manager. His headquarters will be in San Francisco.

French and U. S. Makes Dominate Geneva Show

Two Nations Are Engaged in Keen Competition for Swiss Business

PARIS, March 14—(By Mail)—Occupying a floor area of 86,100 square feet, with 40,000 square feet of galleries and containing 88 makes of cars, the Geneva automobile show is the biggest ever held in Switzerland and the most international on the Continent of Europe. While the leading makers of Italy, Germany, Belgium, Austria and Switzerland are represented, the dominating positions are occupied by France and the United States, the former country having 30 makes of cars and the latter 28.

Competition in this market is keen between France and America, the former having the advantage in the number of cars imported and the latter in total values. Last year the number of French cars imported into Switzerland was 3,742, while the number of American machines was 3,588. The French machines were mostly small models built by Citroen, Renault, Peugeot, etc., having a declared value of 22,725,000 Swiss francs, while the value of the American machines was 29,000,000 francs.

Swiss automobile production is very limited, the only makes represented at the show being Saurer, Berna, Martini, and Maximag.

Show Speeds Sales

SPRINGFIELD, Mass., March 28.—More cars were sold during the recent show held by the Springfield Automotive Dealers' Association than at any previous exhibit here, it is stated by Harry W. Stacy, manager. Prospective purchasers also were more plentiful, he adds. Since the show closed practically every dealer has been working his men at top speed to take care of prospects and sales are reported as exceptionally good.

Distribute Falcon-Knight

SAN FRANCISCO, Cal., March 28.—J. W. Leavitt & Co., of this city have been appointed distributors of the new Falcon-Knight in northern California, and four southern California counties—Los Angeles, Orange, Riverside and San Bernardino. This territory covers about 85 per cent of southern California.

Dealers Greet New Branch Head

IOWA CITY, March 28.—Ninety Ford dealers, salesmen, foremen, service floor men and parts men attended a conference here with representatives from this section of the state attending. F. T. McKay, formerly of Salt Lake City,

Urge Application Only of Volstead Act in Liquor Violations Involving Automobiles

CHICAGO, March 26.—The National Association of Finance Companies has proposed a resolution for the consideration of the United States Chamber of Commerce at its annual meeting in Washington, May 2 to 5, calling upon Federal and State authorities to prosecute all prohibition violation cases in which automobiles figure under the Volstead Act rather than under any other Federal or State laws. The following is the text of the resolution:

"WHEREAS, the Revenue and Tariff Acts of the United States, and the Prohibition Enforcement Acts of some of the states, provide for the confiscation of vehicles used for the illegal transportation of liquor, regardless of the rights of innocent owners or of innocent lienors who own an equity in such vehicles; and

"WHEREAS, innocent owners have had their cars confiscated without redress, when their cars had been stolen from them or had been borrowed by friends without any intimation that they were to be illegally used; and

"WHEREAS, automobile dealers, banks and finance companies engaged in the business of financing the sale of

new branch manager of the Ford Sales and Service in Des Moines, was speaker and the meeting was a get-together to afford field men an opportunity to meet the new branch head. P. L. Holt, assistant manager, was also a speaker.

Hudson-Frampton Appointments

ST. LOUIS, Mo., March 26.—Hudson-Frampton Motor Car Co., Hudson and Essex distributor in the St. Louis district, has announced the appointment of a number of Hudson and Essex dealers throughout the territory.

They are: Hannibal Garage, Hannibal, Mo.; Erhart Motor Co., Quincy, Ill.; P.-M. Garage, Jefferson City, Mo.; Wellsville Hudson-Essex Co., Wellsville, Mo.; W. L. Eichman, Collinsville, Ill.; Payton-Campbell Motor Co., Memphis, Mo.; G. E. Palmer, Salem, Ill.; Kingchester Motor Co., Kingshighway and Manchester, St. Louis, Mo.

New Home for G.M.S.

ALTOONA, Pa., March 28.—The G.M.S. Motor Company will shortly move into more spacious quarters in the central section of the city and become local dealers for Oakland and Pontiac. The new home will be the first floor of the Hinman building at Green avenue and Eighth street.

Paige Dealers Hear Krohn

SAN FRANCISCO, Cal., March 28.—More than 100 Paige dealers and distributors from all sections of northern

automobiles on the installment plan, although entirely innocent of wrong doing, are made to suffer large losses, estimated at about one and one-half million dollars annually, through the confiscation of motor vehicles under these laws; and

"WHEREAS, the Volstead Act, which was intended by Congress to embody all the law necessary and appropriate for the enforcement of Federal Prohibition contains ample provision for safeguarding the rights of innocent owners and innocent lienors in such vehicles, but the Federal officials and some state officials are ignoring the Volstead Act and prosecuting under the other acts above referred to;

"BE IT RESOLVED, by the Chamber of Commerce of the United States:

"That all prosecutions for the illegal transportation of liquors in automobiles or other vehicles, whether by Federal or State authorities, should be brought under the Volstead Act, and not under any other Federal or State laws, and that copies of this resolution be brought to the attention of all Federal and State officials charged with the enforcement of prohibition."

California recently attended the annual Paige convention at the Hotel Whitcomb, this city. Henry Krohn, vice-president of the Paige Detroit Motor Car Company, was the principal speaker. He spoke on the development of the Paige car and merchandising plans for this year.

Given Olds Contracts

ST. LOUIS, Mo., March 26.—The C. & E. Motor Co., 3311 Woodson avenue, Overland, Mo., has been authorized as an Oldsmobile dealer by the St. Louis branch of the Olds Motor Works. L. C. Hosack is owner of the C. & E. Co. and W. H. Christopher is manager.

The Knab Motor Co., Belleville, Ill., and the Jaco Motor Co., Granite City, Ill., have also been named exclusive Oldsmobile dealers.

Forms Reo Sales Company

ST. LOUIS, Mo., March 26.—A. H. Huber, who was connected with the sales force of the Kardell Motor Car Co., Reo distributor here (now incorporated under the name Reo St. Louis, Inc.), has formed a company to handle the Reo in South St. Louis to be known as South Side Reo., Inc., located at 2819-23 South Jefferson avenue. Mr. Huber is vice-president and general manager of the company. J. T. Scobey is president and J. B. Killian, secretary and treasurer. Henry Blanke, formerly of the Kardell service department, is service manager.

Buick Pioneers Guests at Farm of F. W. A. Vesper on Way to San Francisco Convention



Here is the detachment of Buick Pioneers which assembled in St. Louis en route to the first semi-annual convention of the Pioneers in San Francisco the week of March 15. The Pioneers are all old-timers in the industry and with the Buick organization. The picture was taken at Fredmar Farms, the summer home of F. W. A. Vesper, president of the Vesper-Buick Auto Company, St. Louis, one of the members. Numbers of other Pioneers joined the party on its way to the Pacific Coast. Those in the accompanying picture are:

Standing, left to right—W. R. Stephens, vice-president, Pence Auto Co., Minneapolis, Minn.; Lee Folger, general manager, C. C. Coddington, Inc., Charlotte, N. C.; Guy S. Garber, president, Garber Buick Co., Saginaw, Mich.; W. H. Willcockson, secretary and general manager, Vesper Buick Auto Co., St. Louis, Mo.; H. S. Leyman, president, Leyman Buick Co., Cincinnati, O.; F. W. A. Vesper, president, Vesper Buick Auto Co., St. Louis, Mo., and secretary-treasurer of Buick Pioneers; H. E. Pence, president, Pence Auto Co., Minneapolis, Minn., and president of Buick Pioneers; H. K. Noyes, president, Noyes Buick Co., Boston, Mass.; C. C. Coddington, president, C. C. Coddington, Inc., Charlotte, N. C.; C. L. Whiting, Buick distributor, Rochester, N. Y.; W. H. Vesper, vice-president and treasurer, Vesper Buick Auto Co., St. Louis, Mo.

Seated—H. E. Noyes, general manager, Noyes Buick Co., Boston, Mass.; A. D. Corwin, Buick dealer, New York City, N. Y.; A. G. Southworth, branch manager, Buick Motor Company, New York City, N. Y.

Packard Earnings for 6 Months

DETROIT, March 28.—Packard Motor Car Co. and subsidiaries report for six months ended Feb. 28, 1927, net profit of \$5,909,038 after depreciation, federal taxes, etc., equivalent to \$1.96 a share (par \$10) earned on 5,004,264 shares. This compares with \$8,002,358 or \$3.06 a share on 2,614,722 shares in same period of 1926.

For quarter ended Feb. 28, 1927, net income was \$2,073,563 after above charges, equal to 69 cents a share, comparing with \$3,835,475 or \$1.27 a share in preceding quarter and \$3,122,849 or \$1.19 a share on 2,614,722 shares outstanding in corresponding quarter of previous year.

Eaton Axle Pays Dividend

Cleveland, March 28.—Directors of Eaton Axle & Spring Co. declared the regular quarterly dividend of 50 cents a share on common stock, payable May 1 to stockholders of record April 15. President C. I. Ochs stated that sales for this quarter were in excess of sales for the same period in 1926 and that dividend requirements for the first half of 1927 will be earned in the first

quarter. Officers re-elected were as follows:

President and general manager, C. I. Ochs; vice-president, R. C. Enos; secretary and treasurer, F. A. Buchda; assistant secretary and treasurer, H. C. Stuessey.

Frederick E. Wadsworth Dies

DETROIT, March 28.—Frederick Elliott Wadsworth, 58, retired automobile body manufacturer and one of the industry's pioneers, died at Palm Beach, Fla., Sunday, according to word received in Detroit. Burial will be in Palm Beach. Mr. Wadsworth's wife, formerly Mary Mannering, the actress, was with him when he passed away.

Organize at Portsmouth, O.

PORTSMOUTH, O., March 28.—Steps are being taken to organize a local automobile dealers association at Portsmouth, which will include dealers in the immediate vicinity. A. C. Faeh, secretary of the Ohio Council, of the National Automobile Dealers' Association, aided in the organization. John Taylor, local Ford dealer, was named to head the association.

Parts and Accessories Volumes Near '26 Levels

Large Gains in Shipments And Sales Reported by M.&A.M.A. Members

NEW YORK, March 26.—With a 25 per cent gain in February shipments over January, business in automotive parts and accessories is approaching closely the high production and sales levels of a year ago, according to the Motor and Accessory Manufacturers' Association, which reports further progress by members in March.

The dollar volume for all groups of M. & A. M. A. members in February reached an index figure of 146, based on January, 1925, against 126 in January this year and 154 in February of last year.

The most striking gain was made in shipments of original equipment, indicating a sharp upswing in car and truck production, a trend which is generally being continued in March. The index figure for this group stood at 158 in February against 132 in January and 160 in February a year ago.

Another notable gain was made in February by the service equipment manufacturers. Shipments in this division advanced in February to an index of 155 as compared with 140 in January and 158 in February a year ago.

Shipments to the wholesale trade of replacement parts makers dropped from an index of 107 to 100, a frequent seasonal development, while accessory business advanced to 93 from 79 in January. Accessory shipments for some companies were held up earlier by large stocks in dealers' hands.

Death Takes Thos. C. McMillan

MILWAUKEE, March 26.—Thomas C. McMillan, manager of the Milwaukee factory branch of Willys-Overland, Inc., died March 25 following an operation for appendicitis on March 23. Peritonitis developed suddenly.

Mr. McMillan is survived by his wife and two children. One brother, William A. McMillan, is a member of the Lindsay-McMillan Oil Co., a large Milwaukee manufacturer and distributor of fuel and lubricants.

Take Drivers' License Referendum

PEORIA, Ill., March 26.—The Illinois Automotive Trade Association is conducting a referendum of all automotive dealers in the state on the question: "Shall Illinois have a drivers' license law?" A circular has been sent to all dealers containing arguments for and against a drivers' license law, and a return post card has been enclosed upon which each dealer is asked to vote "yes" or "no."

First N.S.P.A. Reference Tables Are Nearly Ready

New Catalog System Is to Provide Interchangeability of Replacement Parts

DETROIT, March 28.—A standardized alphabetical and dimensional reference table, assigning standardized stock numbers, covering all lines of replacement parts, is being compiled by the National Standard Parts Association. The catalog committee, meeting in Detroit last week, reported that complete data for connecting rod and main rod bearings, the first classification to be covered, will be ready within a few days. It was also stated that material for the second group—pistons, is more than 50 per cent complete.

The association plans to cover 18 major lines of replacement parts as the first step in this program. The first nine will be treated in the following order and will be released when completed: (1) Connecting rod and main rod bearings; (2) pistons; (3) piston rings; (4) piston pins; (5) valves; (6) spindle bolts and bushings, steering knuckles and bushings, and tie rod bolts and bushings; (7) bushings; (8) ring and pinion gears, and (9) fly wheel ring gears.

The system will provide complete interchangeability of parts, with standardized stock numbers and a code word for each part listed. The tables will cover every car, truck, tractor and engine made during the last eight years. The association expects to effect great economy in printing costs through this work, as all the manufacturers in each classification can use the same plates.

Through simplification of the alphabetical and dimensional tables it is expected to make the jobber's task much easier by making required information much more accessible than it has been heretofore; while the uniformity in parts numbers which the system will provide promises a common basis for referring to parts that will likewise save time and effort.

Discuss Overland Sales

ROCKFORD, Ill., March 28.—Seventy-five Willys-Overland dealers and members of its sales forces attended a district conference at the Hotel Nelson at which 14 counties in this district were represented. G. V. Orr, president of the Overland Motor Co., the Chicago distributing concern, was speaker and other talks were made by W. P. Devaney, vice-president of the Overland Motor company; G. W. Geiger, sales promotion manager, and W. M. Georgen, service manager. Production plans and sales schedules with accounts of reports and success of other district meetings were principal topics of the talks.

Weekly Used Car Auctions Leyman-Buick Program

CINCINNATI, March 28.—Saturday auction sales in which all Buick dealers under the Leyman-Buick Company, distributors, are to participate are counted on by Buick dealers in this group to clean up their surplus stocks of used cars in preparation for spring business. The sales will be held at the Buick used car depot, the cars of each participating dealer to be delivered to the showrooms as soon as they are reconditioned. It is said they will be disposed of to the highest bidders, with nothing held back. The sales will continue until stocks are down to desired levels.

LeCain Signs for Race

INDIANAPOLIS, March 26.—The second entry to be made for the Indianapolis Motor Speedway race, May 30, is that of Jack LeCain, manager of the Rockingham Motor Speedway, of Salem, N. H. His entry will be a Duesenberg Special. LeCain, a former race driver himself, has not announced the name of the driver. The car he has entered is the same car he entered in the race last year but which he failed to qualify due to the fact that he did not receive the car in time to prepare it.

The first entry in the race was made in January by Harry Hartz.

Scored Best in Contest

WINNIPEG, Man., March 28.—A trip to the Ford plants at Detroit and Windsor is the award won by five salesmen on the staff of the Dominion Motor Company, Ltd., for scoring the best records in a contest extending from the latter part of September until recently. Twenty-five salesmen competed and the five winners were as follows:

Daniel Mabee, Lionel E. Knight, Paul Thorlakson, Gordon Sampson and H. Axford. The Dominion Motor Co. and the Ford Motor Co. were to jointly pay all expenses of the trip.

Buy Machine Tools in U. S.

NEW YORK, March 26.—Machine tools and automotive machinery of American manufacture will be made in large quantities for Citroen Motors, according to F. Schwab, managing director of the Citroen company now in this country. Mr. Schwab will be assisted in the purchase of this equipment by a staff of Citroen engineers who are accompanying him. Purchases will range as high as several million dollars.

Carter Heads Association

JACKSONVILLE, Ill., March 26.—At the annual meeting of the Jacksonville Automotive Dealers Association, officers were elected for the coming year as follows: President, John T. Carter; vice-president, Frank Goin; secretary, Oren Cook; treasurer, C. P. Joy.

Predicts Repeal of War Tax on Passenger Cars

Garner Says 70th Congress Doubtless Will Vote General Relief

WASHINGTON, March 26.—A prediction that the 70th Congress will repeal the three per cent war excise tax now imposed on passenger cars, was made here by John N. Garner of Texas, ranking democrat on the Ways and Means Committee. The statement was made in connection with a republican view that as a result of republican economies in the White House there will be next year a surplus of \$500,000,000 in the Federal government's income.

"The President has said that as soon as the treasury's condition would warrant it, there would be general tax relief. They now predict a surplus of \$500,000,000 in 1928. The republicans will have the whole-hearted cooperation of the democrats in a nonpartisan program to lop off the tax burden at the next session and undoubtedly it will come, including the repeal of the automobile tax," Mr. Garner said.

Legion Sponsors Show

DECORAH, Ia., March 26.—The first automobile show in the history of this town has just closed here, having been sponsored by the American Legion post with car dealers from all over the county represented in the showings in the C. K. Preus gymnasium at Luther college. Accessories were on display in connection with the motor exhibit. Proceeds of the event went to the Legion's \$80,000 Community building fund.

Chance for Arc Welding Student

NEW YORK, March 28.—The American Society of Mechanical Engineers has been appointed custodian of \$17,500 to be given in prizes by the Lincoln Electric Co. of Cleveland, to those contributing, under the rules of the contest, the best three papers disclosing new information that will tend to advance the art of arc welding.

Start New Flat Rate Plan

CINCINNATI, March 28.—A new flat rate service plan developed by the Leyman-Buick Company which will be installed throughout its territory, including the lower half of Ohio, part of Indiana and all of Kentucky and West Virginia, has been announced. A rate book, which will enable mechanics to give a customer the price for installing parts or doing any work that may be needed on a car, has been issued and a service program is being installed which will train men how to find out what a car needs and how to carry that work to conclusion.

Better Bay State Sales Shown in Registrations

February Total Seventy Per Cent Ahead of Same Month Last Year

BOSTON, March 28.—That the tide has turned somewhat in the buying of cars, at least as shown from the registrations up to March 1 in Massachusetts, seems evident by figures just issued by the Motor Registration Department. When January ended it showed that the Bay State was about 34,000 vehicles under the same period of 1926, of which more than 5,000 were trucks and nearly 29,000 were cars.

Now February comes through with an increase of registrations over the same month a year ago of nearly 70 per cent. This seems to be the result of the Washington's Birthday openings in Boston, and the better weather conditions.

The February figures show 25,285 cars this year against 13,616 a year ago. This means a gain of 11,669. Such a big jump has given the dealers and salesmen some needed encouragement. The truck figures show a loss of 448 for that month, bringing the loss for the year to 6,043. The month's figures for these vehicles were 2,370 this year against 2,816 in 1926. The cut down in passenger car totals from a loss of 28,785 up to February 1 this year to a 17,116 loss March 1 shows what can be accomplished by a stretch of good weather. It shows people are going out, particularly as a lot of them could have saved anywhere from \$25 to \$50 taxes by waiting a couple of weeks.

Ross Gear Reorganizes

LAFAYETTE, Ind., March 26.—Announcement is made by the Ross Gear & Tool Co., manufacturer of Ross cam and lever steering gears, of a reorganization in which Edward A. Ross becomes president. Capitalization has been increased by the issuance of \$3,000,000 of common stock, none of which is offered for sale to the public.

David E. Ross, inventor of the cam and lever steering gear, who has been vice-president and general manager of the company has resigned as an officer and director but still retains his stock in the company. D. L. Ross, who has been president and treasurer, becomes chairman of the board of directors and the new president is Edward A. Ross.

Course in Fuel Engineering

PHILADELPHIA, Pa., March 26.—The University of Pennsylvania announces a one-year course in fuel engineering leading to degree of master of science in fuel engineering. This course will be given at the Towne Scientific School of the University of Pennsylvania.

Heads New Department of Oakland Company



Hugh Higginbottom

The Oakland Motor Car Co. has appointed Hugh Higginbottom, formerly director of the department of field operations, as director of distribution in charge of the newly created Department of Distribution. In this capacity Mr. Higginbottom will supervise all dealer activities connected with the factory relationship. His work will keep him in close touch with members of the trade.

Automotive Outlet Best

CHICAGO, March 26.—After three years practical experience in selling radio sets through automotive jobbers and dealers, the Neutrowound Radio Mfg. Co. recently announced that its policy had proved to be so thoroughly practical and successful that it intended to continue its policy of distributing Neutrowound radio receiving sets through automotive distributors and dealers "because it is the most satisfactory way of distributing, installing and servicing radio sets."

For the 1927 season the Neutrowound Co. will announce early in the season a new series of models.

New Jersey Sales Larger

NEW YORK, March 26.—February sales of passenger cars in New Jersey totaled 6747, against 6650 in January and 3743 in February a year ago, according to Sherlock & Arnold's figures.

Space Taken for G. M. Trucks

SIOUX CITY, Ia., March 28.—New wholesale distributing offices of the General Motors truck division will be located in the office section of the \$100,000 block being erected this spring by the Bekins Van and Storage company at Wesley and Riverside avenues. General Motors will have a large office space with corner display rooms in the new building.

Mack Trucks Completing Huge Building Program

To Have 70 Acres Floor Space Upon Finishing Present Construction

NEW YORK, March 26.—Mack Trucks, Inc., is rapidly nearing completion one of the most extensive building programs ever undertaken by an automotive manufacturer. The sales and service branch of the company will have 99 buildings in operation, while the rearrangement of factory facilities will increase production capacity and enable more effective assembly of vehicles and distribution of parts.

Last year nine buildings were completed, at Chicago, Milwaukee, Minneapolis-St. Paul, Tampa, Jersey City, Camden, White Plains, Bridgeport and Worcester, and a building was purchased in Baltimore. Construction work has been started in Rochester and Albany, and an extension begun which will double capacity in Boston. The total floor space available, when the present work is completed, will be 70 acres. Of this 20 acres, comprising 21 buildings, were added in 1926.

The Plainfield (N. J.) plant of the Niles-Bement-Pond Co., which was acquired last year, is being made the general service depot and will soon be in full operation. This will relieve pressure at the New Brunswick plant where parts had formerly been stored for servicing.

Under the new policy of the Mack company sales and service buildings, as well as the land, is owned by the factory as this has been found of great benefit in building local goodwill for Mack products and Mack service. It also makes possible the building of plants on a model plan which the company has developed out of its experience with the needs of truck and bus operators.

Dealers' Displays Profitable

CEDAR RAPIDS, Ia., March 26.—Individual displays and shows staged by Cedar Rapids dealers under a general spring show plan gave an effective start to the spring season, dealers reported. Attendance at all show rooms was large and buyers and prospects were listed in greater numbers than in previous years, the dealers stated.

Show at Fort Madison

FT. MADISON, Ia., March 28.—Fort Madison automobile dealers have completed plans for an auto show in connection with the spring style show here March 31 and April 1. Individual showings will be made and a big parade of all cars will be climax of the event. Edgar S. Sater, manager of the Burlington unit of the Mississippi Motor club, was speaker at the meeting at which the plans were completed.

Salesmanship Essentials Prescribed by Burruss

N. A. D. A. Speaker Stresses Value of Set Selling Talk in Address

CINCINNATI, March 28.—Four factors necessary to successful salesmanship are securing attention, developing interest, creating a desire and forcing action, William B. Burruss, sales consultant of the National Automobile Dealers Association, told members of the Cincinnati Automobile Dealers Association at this organization's final winter meeting and banquet. In addition to the distributors and dealers present, most of the salesmen employed by the various member companies were on hand, the crowd numbering more than 300. The meeting was held at the Gibson hotel.

"Training, equipment, brains and personality," said Mr. Burruss, are necessary requisites in successful selling. He urged salesmen to take advantage of the opportunity for self-development and contact with leading citizens offered by their profession. Mr. Burruss also laid stress upon the value of the set sales talk but urged the necessity of covering up the mechanics of such an argument "just as the magician covers up the mechanics of his tricks."

A committee was appointed by President J. W. Tarbill to select eight nominees for posts in the association's directorate. Four directors will be chosen at the annual meeting set for May 5.

Factory Executives Guests

HOUSTON, Texas, March 26.—The Houston Tire Dealers' Association recently was host to factory representatives and the branch house officials at a banquet. Some forty factory men and branch house heads attended the meeting which was held for the purpose of establishing closer cooperation between the dealers and the branches. The main address was delivered by W. S. Patton of the South Texas Commercial National Bank. W. S. Curtis, president of the local association, presided.

Paris Salon Oct. 6-16

PARIS, March 18—(By Mail)—Rules and application blanks for the 1927 Paris Salon, just issued, indicate that this event will be held in the Grand Palais Oct. 6-16 inclusive and will be comprised of passenger automobiles and all accessories, to the exclusion of trucks and buses.

Foreign firms having exhibited in three previous shows stand on an equality with French manufacturers in the drawings for position, but this does apply to American makers, for the clause

Sell Service That Keeps Owner Satisfied, Hennecke Tells Montreal Tradesmen

MONTREAL, Can., March 28.—Members of the Montreal Automobile Trade Association gathered in the Queen's Hotel to attend the annual official banquet of the association and to hear a message brought from the United States by E. V. Hennecke, president of the Automotive Equipment Association.

Mr. Hennecke stressed the economic value of the automotive industry and predicted an unusually prosperous year in the trade for 1927.

The industry, he continued, is past the swaddling stage and has reached the point where dealers must contribute more than they are doing at the present time. If the present prosperity is to be made permanent, they must do something more than sell cars

—they must sell service; not merely the service that keeps the car on the road, but the service that keeps the customer satisfied.

It is the opinion of those in the automotive industry in the United States, the speaker emphasized, that Canada is entering upon a new and more important stage in its development as a nation. Some of the prosperity which it will share, he believed, would come through the automotive industry. Mr. Hennecke later dealt with problems peculiar to the industry, problems which the dealers must solve in order that they may not be included among those who fall by the wayside each year.

J. E. Smith, president of the association, presided.

Election at Columbus

COLUMBUS, O., March 28.—At the annual election of the Columbus Automobile Dealers' Company, the local automobile dealers association. Wilbur Wimders, head of the Wimders Motor Sales Co., distributor for Chevrolet, was elected president; O. S. Zimmerman, of the Charles Zimmerman Sons Co., Dodge Brothers dealers, vice president; F. M. Babbitt, of the Jordan-Columbus Co., Jordan distributors, secretary, and Anson B. Coates, of the Coates Motor Co., treasurer and manager. The Columbus Automobile Dealers' Company, gave a successful automobile show at the Motor Hall, Ohio State University Grounds and is arranging to give a fall show in connection with the annual Ohio State Fair in September.

Tire Men Organize

CINCINNATI, March 28.—Organized chiefly to promote co-operation and protect the interests of legitimate dealers, tire men of Cincinnati have formed the Cincinnati Retail Tire Dealers' Association, with a charter membership of forty. Most of the prominent dealers in Cincinnati are listed among the charter members and they predict a hundred per cent representation among local tire dealers in the near future. Oscar Kirschner of the Kirschner Tire and Supply Company, is president of the new organization and H. Franklin, secretary.

Chassis Lecturers Meet

ST. LOUIS, Mo., March 26.—E. Phil Merrill, chassis lecturer of the Cadillac Motor Car Co., was elected treasurer and secretary of the National Association of Automobile Chassis Elucidators at a recent meeting at the home of Jack Bledsoe, of the Valley Motor Co., Willys-Overland dealer. The former secretary and treasurer, Joseph T. Cain of Durant Motors, Inc., gave notice at the meeting that he was being transferred to duty in Australia by his company and was obliged, therefore, to resign.

Additional requisites for members were set forth at the meeting. The applicant for membership now must have been a chassis lecturer at at least two national automobile shows to be eligible and at least three members must vouch for his good fellowship and his fair business methods.

Would Change License Rule

ROCHESTER, N. Y., March 28.—Garage owners of this city have launched a drive to bring about a change in the date of issuing automobile licenses in New York. Under the present law new license plates must be displayed on and after Jan. 1, which, according to a survey conducted by the Rochester Garage Owners' Association, works a hardship on the average motorist.

Only about 60 per cent of the motorists in Rochester were operating their cars in January because in many instances they could not afford to purchase new license plates and meet the heavy Christmas expense also, according to the garage owners. As a result the garages lost a lot of valuable business. The garage men are asking that the date for changing license plates be moved forward to April 1.

Football Star Now Dealer

ELGIN, Ill., March 28.—Earl Britton, former University of Illinois football star, has taken the local dealership for the Marmon car and is in sales quarters in his father's implement store, the B. H. Britton company, 112 Brook street.

Ten Cars to Compete In French Grand Prix

July 3 Race Will Be Held Despite the Small List of Entries

PARIS, March 18—(By Mail)—Entries for the French Grand Prix 9½ in. automobile race, to be run at Montlhery on July 3, have definitely closed with 10 cars enrolled. They comprise teams of three each from Bugatti, Delage and Talbot and one Halford car from England.

Although the number of entries is small and no one can be received, the French club has decided to hold the race, for which it is offering 150,000 francs in cash prizes. Last year French 1500 cc. racing cars were not ready and as a consequence the races were devoid of competition. A considerable amount of work has been done since, with the result that the struggle ought to be keen between the three makers. Bugatti and Talbot will race with straight eight supercharged engines; Delage will use a supercharged 12-cylinder engine. Drivers so far selected are Minoia, Dubonnet and Connelli for Bugatti; Segrave and Divo for Talbot and Benoist and Bourlier for Delage.

On the day preceding the Grand Prix the Sporting Commission Cup race will be run over the Montlhery circuit, with 20 cars. Any type of machine is eligible for this race, the only restriction being an allowance of 97 pounds of gasoline and oil for a distance of 248½ miles. The cars entered are: four B. N. C., two Peugeots, three Lombards, two Salmsons, two Montier Specials (modified Fords), one Leroi, one Corre La Licorne, three Bugattis, one Georges Irat and one de Coucy.

Changes by Carter

ST. LOUIS, March 26.—The Carter Carburetor Corp. announces the following changes in personnel: V. J. Lowenstein formerly replacement parts sales manager has been made general sales manager; P. G. Sedley has been appointed sales promotion manager; Jos. Schweiss who was recently transferred from the operating department to the engineering department has been appointed service engineer; L. L. Lowenstein has been added to the replacement sales division in the sales promotion department.

De Dion Bouton Liquidating

PARIS, March 18—(By Mail)—The De Dion Bouton Automobile Co., having stopped production recently, is now in liquidation. The firm is the oldest automobile manufacturing concern in France, having been founded in 1882 and had a capital of 15,000,000 francs and employed about 1500 hands. Ne-

Coming Motor Events

Automobile Shows

Asbury Park, N. J.	March 28-April 2
Casino	
Green Bay, Wis.	Aug. 29-Sept. 2
Auto Building	
Rocky Mount, N. C.	April 4-8
Tobacco Warehouse	
Tampa, Fla.	April 1-5
Davis Islands Coliseum	

American Automobile Association, Annual Meeting, Ritz-Carlton Hotel, Philadelphia	June 16-17
Associated Automotive Engine Re-builders, Hotel Winton, Cleveland	May 26-28
Automotive Equipment Association, Summer Convention, Multnomah Hotel, Portland, Ore.	June 27-July 2
National Association of Automobile Show and Association Managers, Drake Hotel, Chicago	July 26-27
National Automobile Chamber of Commerce, Annual Meeting, New York	June 2

National Highway Traffic Association, Automobile Club of America, New York	April 15
Texas Automotive Dealers Association, Baker Hotel, Dallas	April 14-15

S. A. E.	
French Lick Spring, Ind.	May 25-28 Summer Meeting

Races

A. A. A.

Altoona, Pa.	June 11
Altoona, Pa.	Sept. 5
Atlantic City	May 7
Atlantic City	Sept. 24
Charlotte, N. C.	July 11
Detroit	Sept. 10
Indianapolis	May 20
Los Angeles	Nov. 27
Salem, N. H.	June 25
Salem, N. H.	Oct. 13
Syracuse, N. Y.	Sept. 3

Menard Takes on Auburn

ROCHESTER, N. Y., March 26.—Auburn-Menrad Motors has been organized by Oscar M. Menrad to distribute Auburn in the Rochester territory. A showroom and service station have been opened at 552 Main street east, on the edge of the downtown business district.

Shop Equipment Display

DETROIT, March 26.—The Michigan Automotive Supply Co., which recently moved into larger quarters at 41 Harper avenue, has just held a model shop and equipment display. The entire third floor was given over to the exhibit and 50 manufacturers have sent factory representatives here to handle their respective displays during the showing.

Will Distribute Locomobile

ST. LOUIS, Mo., March 26.—The Locomobile of Missouri, a new organization formed to distribute Locomobile cars in the St. Louis territory, has opened business at 2727 South Jefferson avenue. Fred Cramme and Theodore Ziock associated with Elmer H. Burgdorf of the Burgdorf Motor Co. are sponsors of the new company.

Has Studebaker Franchise

LINCOLN, Ill., March 26.—C. J. Robinson, formerly of Bloomington, has been appointed distributor for the Studebaker car here and has opened an agency at 109 North Logan street. Mr. Robinson has been salesman for some time with the Tracy Green Company in Bloomington and now embarks in business for himself.

Prices and Weights of Current Passenger Car Models

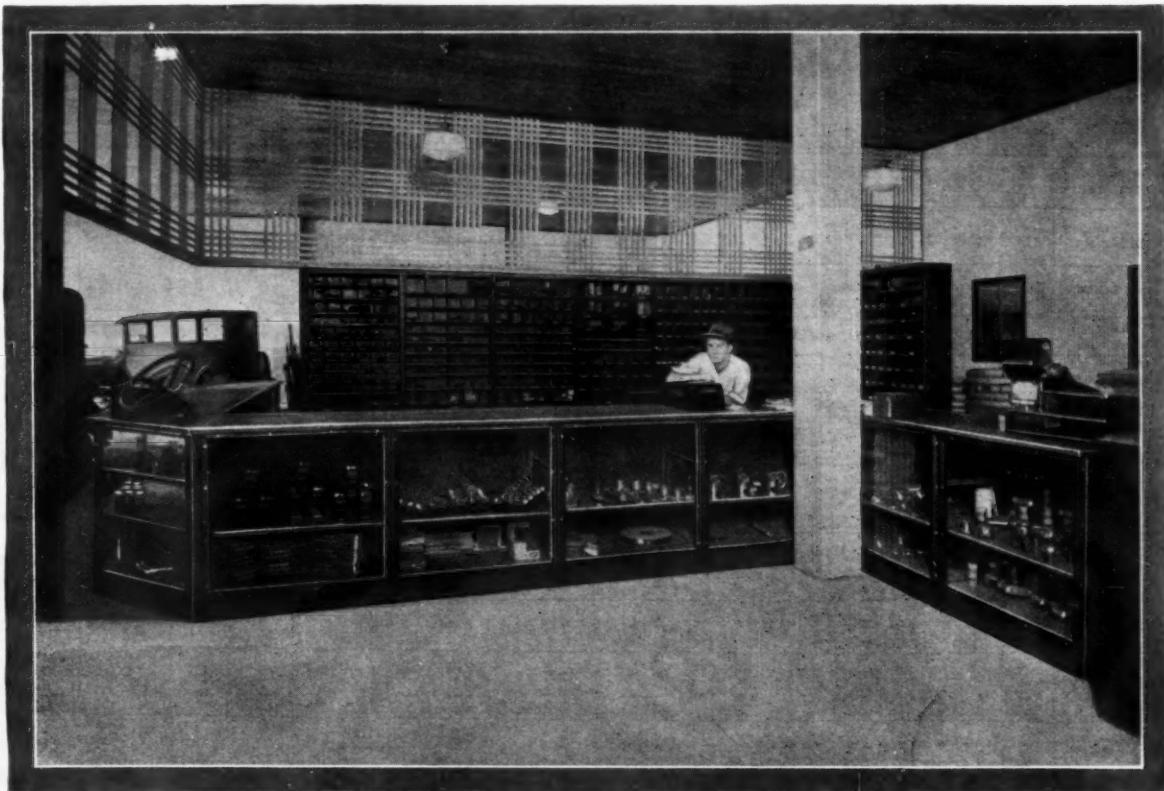
SHIP WT. PASS. BODY STYLE. PRICE	SHIP WT. PASS. BODY STYLE. PRICE	SHIP WT. PASS. BODY STYLE. PRICE	SHIP WT. PASS. BODY STYLE. PRICE	SHIP WT. PASS. BODY STYLE. PRICE
AUBURN "6-66"	CHEVROLET "AA"	DU PONT "E"	E-3"	
2-4-p Roadster \$1,095	1890 2-p Roadster \$ 525	3700 4-p Roadster \$2,800	3300 5-p Touring \$1,945	
5-p Touring 1,145	1965 5-p Touring 525	3850 5-p Touring 2,800	3360 7-p Touring 2,045	
3040 5-p Sport Sedan 1,195	2090 2-p Utility Coupe 625	3850 4-p Coupe 3,200	3355 2-4-p Roadster 2,045	
3080 5-p Sedan 1,295	2190 5-p Coach 595	4100 5-p Sedan 3,400	3465 2-4-p Coupe 2,345	
3040 5-p Wanderer Se'n 1,345	2275 5-p Sedan 695	4100 5-p Conv't. Sedan 3,750	3515 5-p Brougham 2,245	
"8-77"	2135 2-4-p Cabriolet 715		3545 5-p Sedan 2,345	
	2270 5-p Landau Sedan 745		3525 5-p Victoria 2,345	
2-p Roadster \$1,395	CHRYSLER "50"	ELCAR "6-70"	Victoria 2,345	
5-p Touring 1,445	2145 5-p Touring \$ 750	2580 4-p Lan. Rdster \$1,475	3360 7-p Sedan 2,495	
3350 5-p Brougham 1,495	2025 2-p Roadster 750	2670 5-p Brougham 1,295	3360 7-p Sedan Lim. 2,595	
3390 5-p Sedan 1,695	2130 2-4-p Roadster 795	2750 5-p Sedan 1,395		
3390 5-p Wanderer se'n 1,745	2230 2-p Coupe 750			
"8-88"	2335 5-p Coach 780			
(129 in. W. B.)	2410 5-p Sedan 830			
3180 4-p Sp. Roadster \$1,995	2350 5-p Landau Sedan 885	3675 7-p Touring \$2,265		
3200 5-p Touring 2,045	"60"	3620 2-4-p Land. R'dster 2,295		
3380 5-p Sport Sedan 2,095	2570 5-p Touring \$1,075	3320 2-4-p Brougham 1,595		
3460 5-p Sedan 2,195	2545 2-p Roadster 1,145	3410 5-p Sedan 1,790		
3450 5-p Wanderer 2,245	2615 2-4-p Roadster 1,175	3895 5-p Sedan 2,465		
(146 in. W. B.)	2690 2-p Coupe 1,125	4245 7-p Sedan 2,765		
4200 7-p Sedan \$2,595	2685 3-5-p Coupe 1,245			
	2795 5-p Coach 1,145			
	2835 5-p Sedan 1,245			
BUICK "115"	"70"	ERSKINE "8"	Series "AA"	
2990 2-4-p Roadster \$1,195	2845 2-4-p Roadster \$1,495	3470 5-p Cus. Sedan \$2,495		
3040 5-p Touring 1,225	2930 5-p Phaeton 1,395	3470 4-p Cus. Victoria \$2,495		
3110 2-4-p Coupe 1,195	2905 5-p Sp. Phaeton 1,495			
3215 5-p 2d. Sedan 1,195	2905 4-p Coupe 1,595			
3190 4-p Coupe 1,275	3000 2-4-p Royal Coupe 1,545			
3190 2-p Spec. Coupe 1,275	3090 5-p Brougham 1,625			
3300 5-p 4d. Sedan 1,295	3150 5-p Royal Sedan 1,595			
3305 5-p Town Bro'm 1,375	2935 2-4-p Cabriolet 1,745			
"120"	3160 5-p Crown Sedan 1,795			
(120 in. W. B.)	"80"			
3800 4-p Coupe \$1,465	(185½ in.)*			
3750 5-p 2d. Sedan 1,395	3765 5-p Phaeton \$2,495			
3870 5-p 4d. Sedan 1,495	3805 2-4-p Roadster 2,595			
"128"	4110 5-p Coupe 3,095			
(128 in. W. B.)	4055 5-p Sedan 3,095			
3655 2-4-p Sp. Roadster \$1,495	(192½ in.)*			
3725 4-p Sp. Touring 1,525	4090 4-p Coupe \$2,895			
3905 3-p Country Club 1,765	4025 2-p Cabriolet 3,495			
3940 5-p Coupe 1,850	4250 5-p Coach 895			
3915 3-5-p Conv't Coupe 1,925	(198½ in.)*			
4050 5-p Brough. Sedan 1,925	4195 7-p Sportif \$3,995			
4115 7-p Sedan 1,995	4370 7-p Sedan Llm. 3,595			
CADILLAC "314" Standard Line	4432 5-p Town Car 5,495			
(132 in. W. B.)	5000 6-p Limousine 8,100			
4170 5-p Brougham \$2,995	CLOTH Upholstery. Leather at extra cost.			
4105 2-p Coupe 3,100	"Overall length.			
4190 5-p Victoria 3,195				
4270 5-p Sedan 3,250				
4460 2-p Sport Coupe 3,500				
4590 5-p Sport Sedan 3,650				
(138 in. W. B.)				
4420 7-p Sedan \$3,400				
4480 7-p Imperial 3,535				
CUSTOM Built				
(132 in.)				
4220 2-p Roadster \$3,350	3750 4-p Roadster \$3,500			
4300 2-p Conv't Coupe 3,450	3800 4-p Sp. Tourer 3,500			
(138 in. W. B.)	3700 4-p Phaeton 3,500			
4285 7-p Touring \$3,450	4200 4-p Petite Coupe 4,500			
4275 5-p Phaeton 3,450	4200 4-p Sp. Touring 6,650			
4705 5-p Sp. Phaeton 3,975	4700 4-p Coupe 7,600			
4465 5-p Coupe 3,855	4700 7-p Limousine 8,100			
4465 5-p Sedan 3,995	4150 5-p Touring \$1,785			
4580 7-p Suburban 4,125	3150 5-p Roadster 1,985			
4615 7-p Imperial 4,350	3100 2-p Roadster 1,985			
CASE J. I. C.	3200 4-p Sp. Touring 1,985			
2290 5-p Touring \$1,885	3000 5-p Sedan 1,955			
3640 5-p Sedan 2,590	3055 5-p Imperial Sedan 1,795			
"Y"	3055 5-p "94-27"			
3950 7-p Touring \$2,225	3055 5-p "94-27"			
CHANDLER Big Six				
2200 2-4-p Roadster \$1,695	2350 5-p Roadster \$1,245			
2330 5-p Touring 1,545	2500 5-p Touring 1,285			
3345 7-p Touring 1,645	2670 5-p Sedan 1,285			
3570 5-p 20th C'y Sedan 1,495	2375 3-p Coupe 1,285			
3570 5-p Met. Sedan 1,595	2575 5-p Imp. Sedan 1,335			
3485 4-p Coupe 1,675	3050 5-p "Series 98"			
3570 5-p De Luxe Sedan 1,695	3050 5-p Touring \$1,795			
3725 7-p Sedan 1,895	3170 5-p Del. Bro'm 1,995			
Standard Six (108½ in. W. B.)	3200 4-p Polo Roadster 1,795			
2475 5-p Touring \$ 945	3150 5-p Princess Coupe 1,865			
2565 5-p De Luxe Tour. 1,005	3150 5-p Emperor Sedan 1,885			
2470 2-4-p Sport. R'dster 1,135	3200 5-p "94-27"			
2685 5-p Sedan 995	3250 5-p Limousine 2,910			
2620 2-p Coupe 1,035	3250 5-p Collap. Coupe 2,925			
2685 5-p De Luxe Sedan 1,095	3250 5-p Tandem Sport 3,150			
3220 2-p De Luxe Coupe 1,125	3200 5-p Sedan 2,910			
Special Six (115 in. W. B.)	3200 5-p Sedan 2,910			
2890 5-p Touring \$1,145	3640 7-p Ber. Sed. DeL. 3,585			
2940 5-p Sport Touring 1,295	3640 5-p Sedan 2,910			
2995 2-p Coupe 1,195	3640 5-p Town Car 5,000			
2230 5-p Sedan 1,295	DODGE BROTHERS			
"Royal Str. 8"	2448 2-p Roadster \$ 795			
7-p Touring \$2,195	2541 2-p Spec'l Roadster 845			
4-p Roadster 2,195	2574 5-p Touring 795			
4-p Coupe 2,195	2669 5-p Spec. Touring 845			
3760 5-p Sedan 2,195	2622 2-4-p Sport Roadster 975			
3870 7-p Sedan 2,295	2598 2-p Coupe 845			
	2668 2-p Spec. Coupe 895			
	2870 7-p Sedan 895			
	3755 5-p Sedan 1,750			
	HUPMOBILE "A-1"			
	3660 4-p Brougham 1,575			
	3870 7-p Sedan 1,850			
	3890 6-p Sedan 1,750			
	LOCOMOBILE "8-66"			
	3620 5-p Sedan 1,785			
	3035 4-p Roadster 1,895			
	3235 5-p Sedan 1,895			
	3330 5-p Brougham 1,895			
	3660 2-4-p Conv't. Coupe 2,650			
	3870 4-p Victoria 2,650			
	4165 7-p Sedan 2,850			
	LASALLE "8"			
	3220 5-p Phaeton \$2,185			
	3360 4-p Speedster 2,395			
	3485 4-p Coupe 2,095			
	3505 5-p Brougham 2,095			
	3630 5-p Spec. Bro'm 2,295			
	3760 5-p Bro'm Sedan 2,395			
	3890 5-p Conv't. Bro'm 2,795			
	3945 7-p Sedan 2,795			
	FRANKLIN "11-B"			
	3200 5-p Sport. Road. \$2,690			
	3360 4-p Touring 2,635			
	3510 3-p Coupe 2,490			
	3520 5-p Sedan 2,565			
	3630 5-p Sedan 2,790			
	3730 4-p Victoria 2,740			
	3830 5-p Oxford Sedan 2,815			
	3930 7-p Limousine 2,990			
	4030 7-p Sedan 3,495			
	4125 7-p Ber. Sed. DeL. 3,585			
	GARDNER "80"			
	2900 4-p Roadster \$1,395			
	3000 4-p Roadster DeL. 1,495			
	3105 5-p Sedan 1,695			
	3230 5-p Sedan 2,790			
	3165 4-p Victoria 2,740			
	3230 5-p Oxford Sedan 2,815			
	3305 4-p Sp. Sedan 2,910			
	3360 7-p Limousine 2,990			
	3430 5-p Collap. Coupe 2,925			
	3430 5-p Tandem Sport 3,150			
	HUDSON "Std. Line"			
	3505 5-p Coach \$1,285			
	3620 5-p Sedan 1,385			
	"Custombuilt"			
	3660 4-p Phaeton \$1,600			
	3870 7-p Sedan 1,500			
	3755 5-p Sedan 1,750			
	HUPMOBILE "A-1"			
	3620 5-p Brougham 1,575			
	3870 7-p Sedan 1,850			
	3890 6-p Sedan 1,750			
	LINCOLN "8"			
	4475 4-p Sportif \$5,900			
	4670 4-p Roadster 5,900			
	4870 4-p Victoria Coupe 6,950			
	4870 4-p Victoria Sedan 7,300			
	4890 7-p Sedan 5,300			
	4945 7-p Limousine 6,500			
	LOCOMOBILE			
	"8-66"			
	3055 5-p Touring \$1,785			
	3235 4-p Roadster 1,895			
	3330 5-p Sedan 1,895			
	3465 5-p Brougham 1,895			
	"8-80"			
	3660 2-4-p Conv't. Coupe 2,650			
	3870 4-p Victoria 2,650			
	4165 7-p Sedan 2,850			
	"90"			
	3620 5-p Sedan 2,850			
	3870 7-p Sedan 3,850			
	4165 7-p Sedan 3,850			
	HUPMOBILE "A-1"			
	3620 5-p Brougham 1,575			
	3870 7-p Sedan 1,850			
	3890 6-p Sedan 1,750			
	LINCOLN "8"			
	4475 4-p Sportif \$5,900			
	4670 4-p Roadster 5,900			
	4870 4-p Victoria Coupe 6,950			
	4870 4-p Victoria Sedan 7,300			
	4890 7-p Sedan 5,300			
	4945 7-p Limousine 6,500			
	LOCOMOBILE			
	"8-66"			
	3055 5-p Touring \$1,785			
	3235 4-p Roadster 1,895			
	3330 5-p Sedan 1,895			
	3465 5-p Brougham 1,895			
	"8-80"			
	3660 2-4-p Conv't. Coupe 2,650			
	3870 4-p Victoria 2,650			
	4165 7-p Sedan 2,850			
	"90"			
	3620 5-p Sedan 2,850			
	3870 7-p Sedan 3,850			
	4165 7-p Sedan 3,850			
	HUPMOBILE "A-1"			
	3620 5-p Brougham 1,575			
	3870 7-p Sedan 1,850			
	3890 6-p Sedan 1,750			
	LINCOLN "8"			
	4475 4-p Sportif \$5,900			
	4670 4-p Roadster 5,900			
	4870 4-p Victoria Coupe 6,950			
	4870 4-p Victoria Sedan 7,300			
	4890 7-p Sedan 5,300			
	4945 7-p Limousine 6,500			</td

Prices and Weights of Current Passenger Car Models

Mechanical Specifications of Current Transformer

the *U.S. Army Medical Research Institute of Infectious Diseases* in Frederick, Maryland.

Motor Age



LYON Auto Parts Control Helps Chevrolet Dealer Build Business AGAINST GREAT ODDS

Only 640 income tax returns are made from Gadsden, Ala.—all under \$5,000. Per capita income is \$304 per year. Yet Lassiter Brothers, Chevrolet dealers, have made a fine success in this territory.

Note the size and appearance of their store. To the left you can see part of their automobile display room. In the foreground their efficient, up-to-date business methods are noticeable. Parts stock, amounting to about \$7,000, is kept in the Chevrolet System of Lyon Auto Parts Control. Any part is available without wasted time. Lyon glass fronted counters give clean, attractive display to other merchandise items.

Lassiter Brothers believe that a well-balanced stock, adequately dis-

played, is a service to customers and a source of profit to themselves. Their Lyon Equipment is a big help to them in speeding up service and sales and in eliminating wasted time, wasted effort and wasted money.

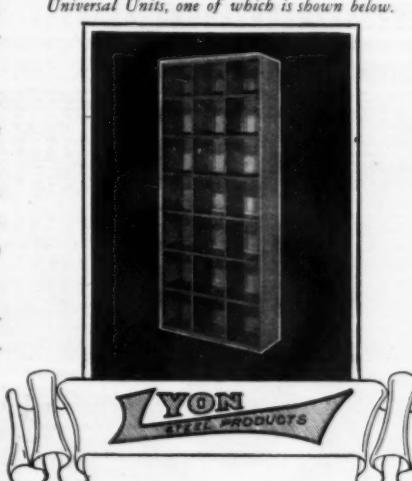
For every Chevrolet dealer, from the smallest to the largest, there is a special Lyon Auto Parts Control System designed specifically to his needs. There is a Lyon Auto Parts Control for every dealer. Write for complete information giving the names and numbers of cars you service, or ask your automotive jobber.

LYON METALLIC MANUFACTURING CO.

AURORA, ILLINOIS

Plant No. 2
Jersey City, N. J.

Plant No. 3
Los Angeles, Calif.



LYON Auto Parts Control

Storage Systems, Counters, Steel Benches, Bench Drawers, Tool Boxes, Display Racks, Cabinets, Lockers and Miscellaneous Steel Equipment

Mechanical Specifications of Current Passenger Car Models—Continued

(From page 40)

An advertisement directed to the dealer
in small territories

Are the \$2500-\$3000 Car Buyers Going to ? Your Competitor ?

RETAINING present owners on his lists is one of the most pressing problems of the automobile dealer in small territories. Especially where the car handled is low-priced. Owners are constantly "growing up" financially—passing on to higher-priced makes. Some one else profits.

More and more, progressive small dealers are meeting this situation in the only way it can be met: by extending their line to keep pace with their owners. What are you doing to round out your line?

Dividing the motor car field into \$500 units, one peculiarity stands out. And that is this: in the class between \$2500 and \$3000—logically the best-selling section of the fine car field—

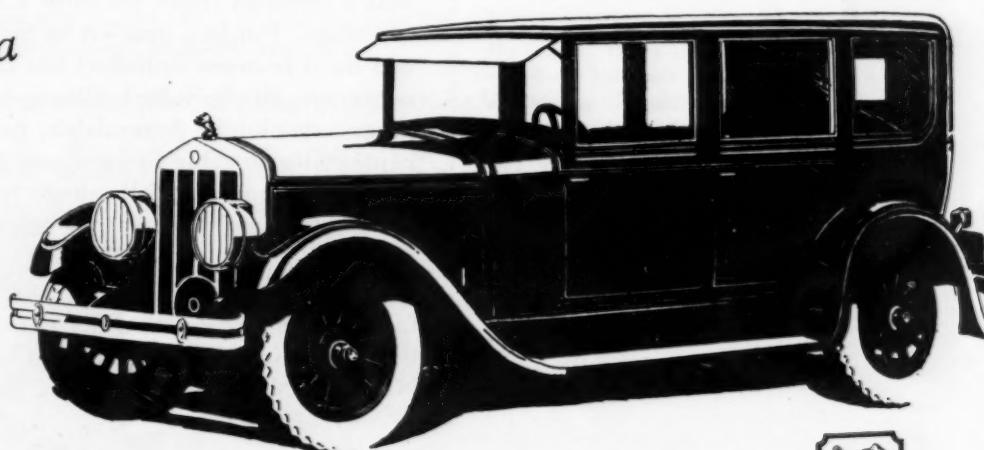
There Should Be a
Fine Car in
YOUR Line

there are fewer competitors than in any other. More than that, Franklin has long been one of its three sales leaders. And only Franklin completely covers the field.

In general, you know the fine reputation and sound financial standing of the Franklin Company—the popularity of the new de Causse-styled models, especially at the new prices—the unusual number of dealers who have handled Franklins for many successive years without a break—the high proportion of repeat sales that Franklin enjoys.

Interesting information about this modern dealer trend toward a well-rounded line will be sent you on request.

FRANKLIN AUTOMOBILE COMPANY
SYRACUSE, N. Y.

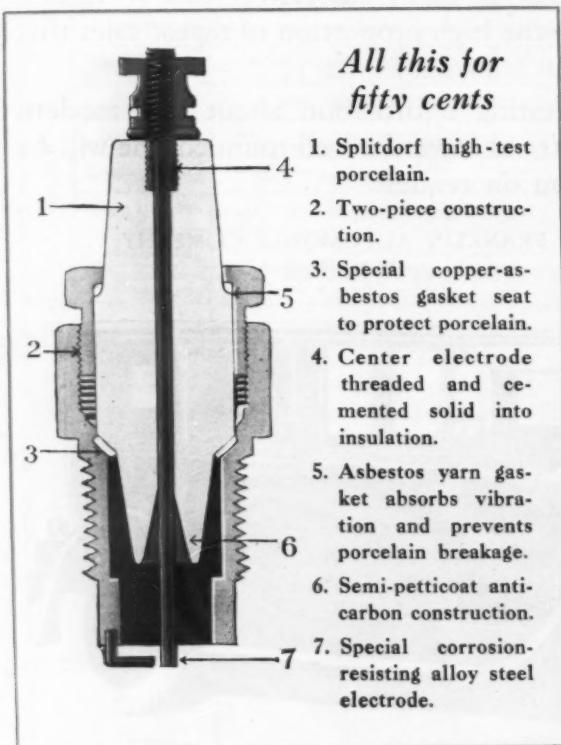


FRANKLIN



When you "tune up the engine"

remember that
Splitdorf Spark Plugs
 are great little
 engine tuners!"

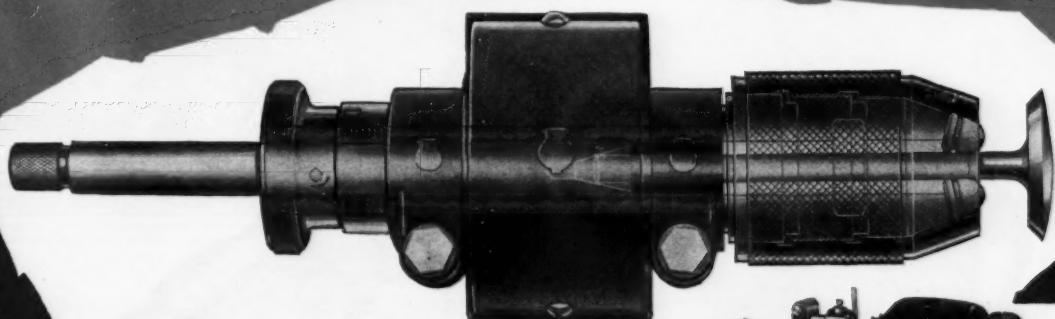


ONE new plug may make one cylinder fire better, but it won't put the vim and vigor into the motor that a full set of Splitdorf Plugs do. You can't "tune up" a fiddle with one string or an engine with one plug. A motor with a collection of spark plugs—all kinds, all ages—will sound a sour note somewhere. Spark gaps vary, carbon is thicker on some plugs than on others—firing is bound to be irregular.

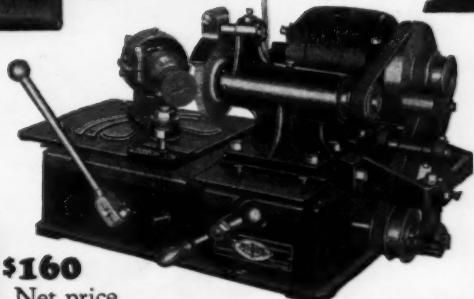
To get the sweet-running, pick-up-and-go performance that a motorist looks for after a tuning up, replace all his old plugs. Put in a new set of Splitdorf Spark Plugs. You can do it because Splitdorf has made a price of only fifty cents on all Splitdorf Plugs—high-grade, first-quality plugs—absolutely dependable, perfectly uniform and exceptionally durable—every one of them. There's a type for every engine. All plugs tested at the factory for mechanical and electrical perfection.

For Fords there are four Splitdorf Spark Plugs in a special carton that retails for \$1.75. Here's a ready money-maker—a short cut to a big volume of Ford replacement business. Splitdorf Electrical Company, 392 High Street, Newark, N. J. *Subsidiary of Splitdorf-Bethlehem Electrical Company.*

VALVE FACE GRINDING MACHINE



The NEW Sioux Roller Chucking System



\$160

Net price
complete Patent applied for

No. 650

IT'S nothing less than revolutionary! The accuracy the speed the efficiency on valve work made possible by this new chucking system is amazing. It's a Sioux achievement — and can be had *only* in the Sioux Valve Face Grinding Machine.

The valve stem slips into this chuck easily and the rollers automatically push the valve stem back against the aligner when you tighten the chuck, assuring a perfect alignment. Rollers have a long, firm gripping surface. They float and roll, changing position on every valve chucked, insuring long life. *Guaranteed accurate within .001.* Capacity 5-16" to 41-64" inclusive.

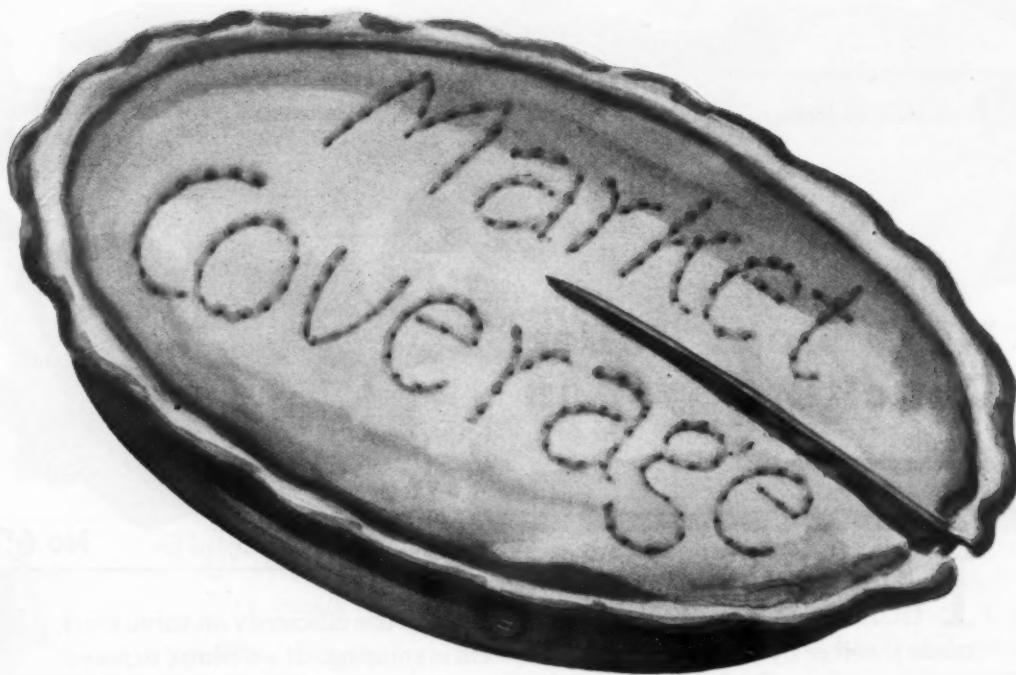
Make real profits in valve servicing with the Sioux Valve Face Grinding Machine.

Your Jobber Sells It.

ALBERTSON & CO.
SIOUX CITY, IOWA



THE PIE is 97.37% yours under the Willys-Overland Franchise



A Real Profit-Opportunity

THE Willys-Overland dealer franchise has 4 definite, money-making sales advantages that make it the dominant and most desirable franchise in the industry. Advantages that place the "Pie" in front of you and enable you to take most of it for yourself.

Engineering Leadership

For years Willys-Overland engineers have been working to perfect a line of cars far in advance of other cars—a line of cars, thoroughly modern. With the perfection of the Whippet and Whippet Six, Willys-Overland now has a completely modern car in every price class.

Each car is engineered according to the latest

engineering principles. They are not "old-fashioned" chassis with new bodies. They are modernly engineered in every detail—in engine, chassis and body design.

The battle this year in the automobile industry will be—not over style or even price—but over modern engineering—with Willys-Overland leading the parade.

97.3% Market Coverage

With the Whippet covering 44% of the field—the Whippet Six covering 19% of the field—the "70" Willys-Knight Six covering 23% of the field and the Willys-Knight Great Six covering 11%, you have a line of cars that appeals



to 97.3% of the pocketbooks in your community.

The ordinary dealer with one or two cars to sell covering 15 to 30% of the market cannot possibly have the same opportunity to make big profits as the Willys-Overland dealer. He can only appeal to 30 buyers out of every 100 where the Willys-Overland dealer appeals to 97.

92% Profit Coverage

Out of every \$100 spent for motor cars in your community \$92 of it is spent on cars such as Willys-Overland offers.

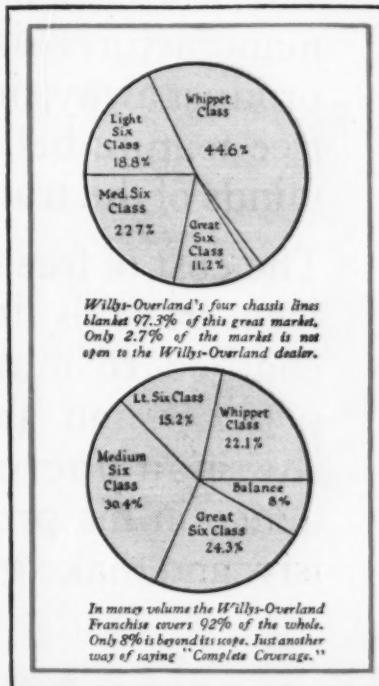
No wonder Willys-Overland dealers are making money. Every day from all over the country letters come in from enthusiastic dealers—some new and some pioneers—who are making more money than they ever did before.

The reason is very clear—they *should* make more money—they have a better opportunity to do so!

Add the Knight Engine

To the outstanding advantages of the Whippet and Whippet Six—to the engineering leadership of the whole line—to the complete coverage both in volume of cars and volume of profits—add to all that the unusual sales advantage of the Knight engine. The engine that *improves* with use. No carbon-removing—no valve-grinding—no noisy tappets or valve springs—less upkeep. The result is dealer profit.

If you are just entering the automotive industry as a dealer; or if you are a dissatisfied dealer; or if you are satisfied but desirous of increasing your profits, Willys-Overland can help you. The Willys-Overland Franchise presents every opportunity for dealers to make maximum profits. Willys-Overland, Inc., Toledo, Ohio. Willys-Overland Sales Co., Ltd., Toronto, Canada.



Willys-Overland

Fine Motor Cars

Is Something for Nothing Always "Worth Just That"?

IT occasionally happens that the manufacturer of a product that is good, elects to introduce it by the distribution of free samples—or by the method of a free trial with returning privileges included.

This does not mean that the manufacturer is giving his product away, nor should the free feature belittle it in the minds of the trade.

The cost of free samples and free trials is legitimately charged to marketing expense—and should reflect the manufacturer's confidence in his product to satisfy, and make good.

MOTOR AGE
5 South Wabash Avenue
Chicago, Ill.

Add a Lasting Thrill to any Motor

A Backbone
of Steel

BOHNALITE

Bohn Products include Ring True Bearings—Bohnalite Castings, semi-permanent, permanent mold and sand, Nelson Bohnalite pistons; we also supply the government with replacement pistons and bearings for the Liberty engine.

THE LIGHT ALLOY PISTON WITH A STEEL BACKBONE



of Steel

Claims for smooth performance, minimum vibration, high speed, flexibility, quick acceleration have always been made for light alloy pistons, but these are empty claims unless they include satisfactory durability.

So, into the Nelson ^{*}Bohnalite Piston is cast a backbone of steel which adds to these much desired qualities — LONG LIFE, combining in this product all the advantages of light alloy and cast iron pistons.

Nelson Bohnalite Pistons are already being used by manufacturers of cars, for which they claim unprecedented performance—a list of them will be gladly furnished upon request along with a booklet which further describes the design of this outstanding piston.

The Backbone of Steel or Strut

Special alloy steel struts are cast in, to control expansion and maintain satisfactory clearances under all engine operating conditions. The struts are the backbone of piston endurance and long life.

BOHNALITE, the alloy from which this piston is made, should never be confused with any other light alloy upon the market. Every Nelson Bohnalite Piston is heat-treated for uniformity, strength and hardness.

BOHN ALUMINUM & BRASS CORPORATION
EAST GRAND BOULEVARD, DETROIT



INDIA TIRES



INDIA TIRE & RUBBER CO. AKRON, OHIO

Why Distributors and Dealers are Taking On the Kissel Line

Since the introduction of the new Popular Straight Eight and the new All-Year Brougham, Kissel has added important distributors and dealers all over the country.

The reason is plain. These distributors and dealers realize that they must have a greater volume to make a real profit out of the automobile business today. To get that greater volume they further realize that they must capture a new and independent market.

Kissel's market is the market that no other car can have. It is a market that demands exclusive style and exclusive features which Kissel, and Kissel alone, can give.

For this reason Kissel's position in the industry is indeed unique. Starting in 1906 Kissel has been the acknowledged style-leader and continues to be the style-leader for the whole industry. In this long period there has never been a change in the management of the company—never a reorganization.

Furthermore, Kissel distributors have remained Kissel distributors for a great number of years. They have made money—that is the answer.

And now, more than ever before, Kissel presents to distributors and dealers everywhere an opportunity to gain and hold a market which they cannot hope to have with any other make of car. That is why more distributors and dealers than ever are turning to Kissel and why since the first of the year Kissel has added an uncommonly large number of representatives.

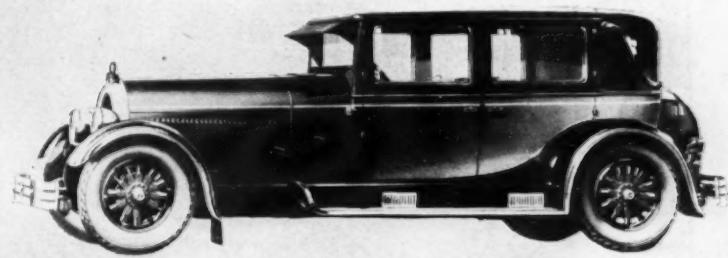
Sixes and Straight Eights—\$1695 to \$3585 f.o.b. factory

KISSEL MOTOR CAR COMPANY · HARTFORD · WISCONSIN

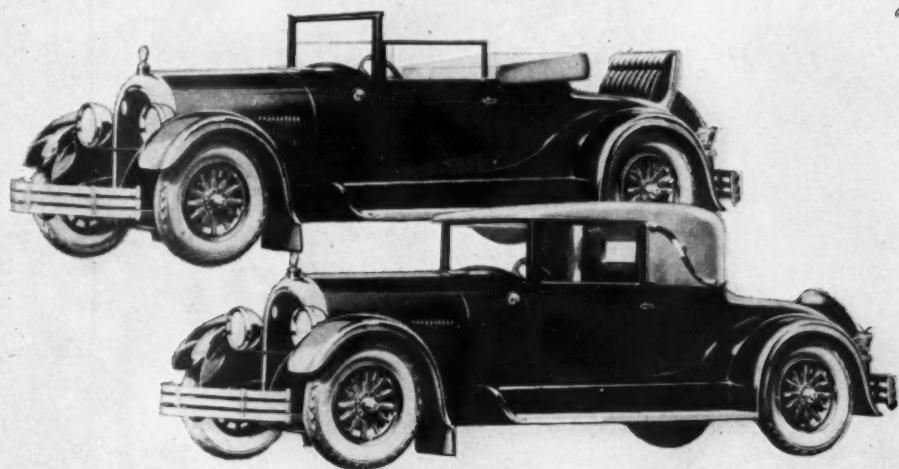
KISSEL

CUSTOM BUILT

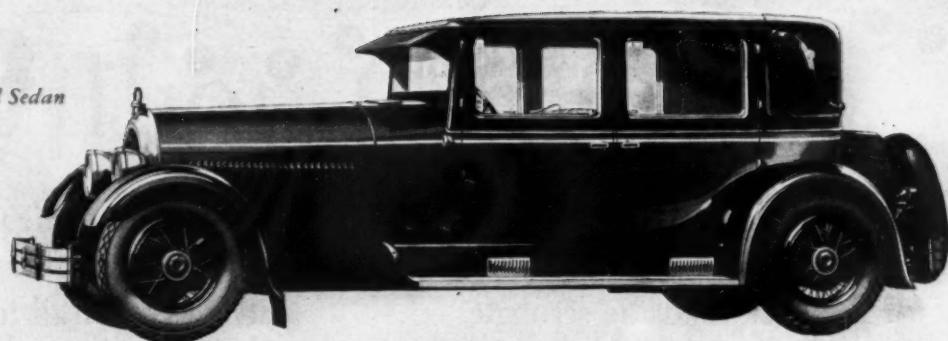
*The All-Year Coupe Roadster
Two Cars In One*



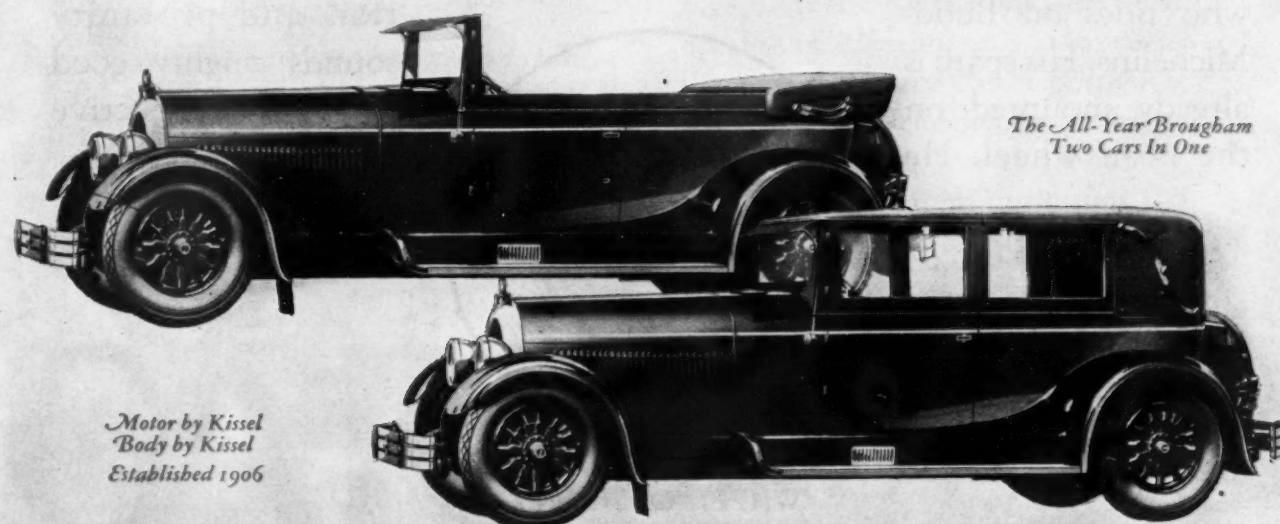
The New Four-Door Brougham



*The 8-75—4-Door Special Sedan
139" Wheelbase*



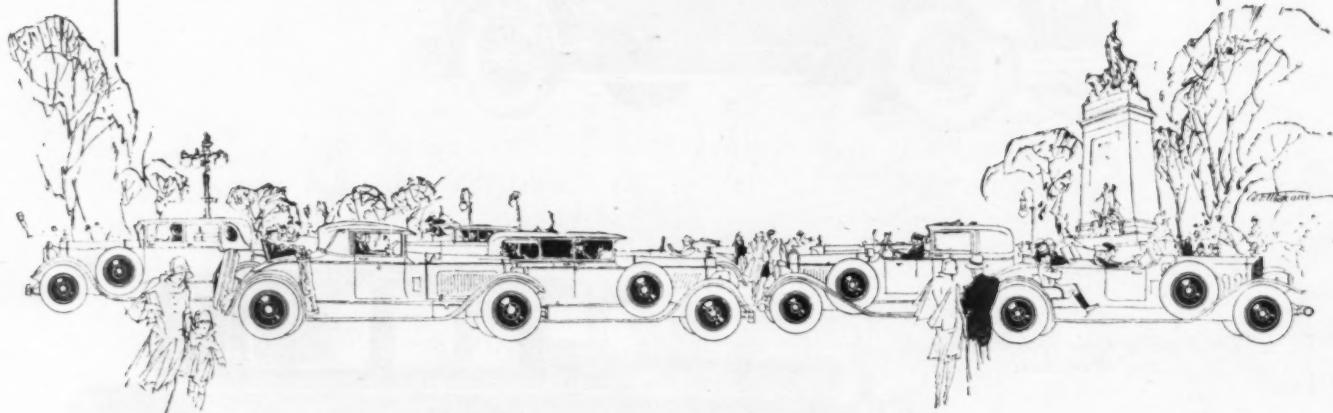
*The All-Year Brougham
Two Cars In One*



*Motor by Kissel
Body by Kissel
Established 1906*

"A demountable wheel is much more convenient for an owner driver than the demountable rims such as my old had"

Cleveland, Ohio



TO MANY MOTORISTS the bump and rumble of a flat is the signal for another roadside struggle.

But it is no battle cry to the man who rides on Budd-Michelins. His spare is already mounted on the extra wheel. He

simply lifts off the wheel that has the flat, slips on the extra wheel and is off and away . . . all in four minutes.

This saving of time, perspiration and profanity sounds mighty good to every prospective buyer.





A Million-Car Okeh

Nothing more directly influences engine and car behavior than the carburetion. Factory-standard in a million cars annually, it is very largely up to Carter carburetors to satisfy more than a fifth of all American motor car purchasers each year!

With so much at stake Carter enforces precision and inspection practices which would otherwise seem needlessly rigorous—particularly when the plain tube principle pioneered by

Carter is so free of "temperamental" factors in production and application.

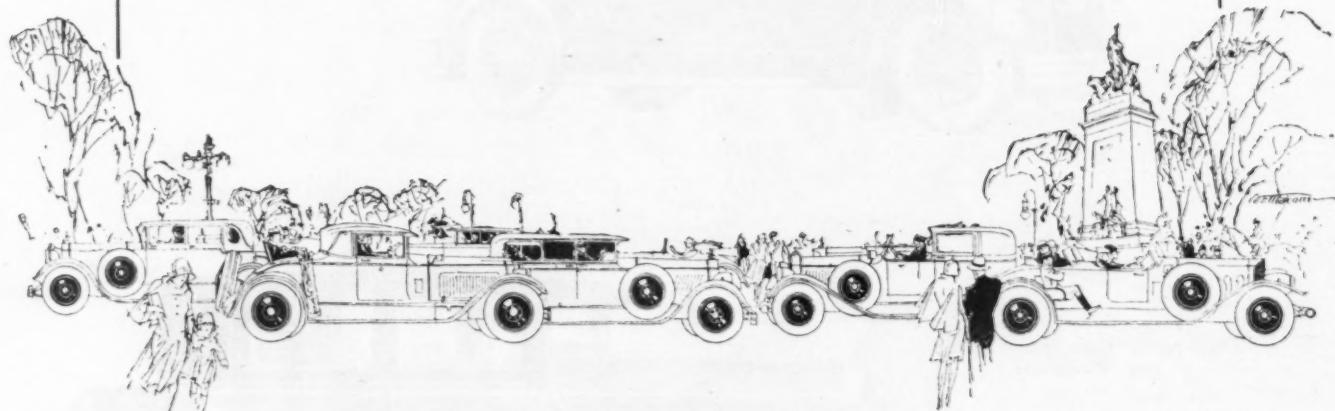
All the way from design and material specifications to finish, packing, and field co-operation, Carter shows extra regard for the purchaser's final good opinion of his whole car. Shaped to this one end, every Carter purpose is made still more effective by the backing of American Car and Foundry Company, the parent institution.

CARTER CARBURETOR CORPORATION, SAINT LOUIS

CARBURETER

"A demountable wheel is much more convenient for an owner driver than the demountable rims such as my old had"

Cleveland, Ohio



TO MANY MOTORISTS the bump and rumble of a flat is the signal for another roadside struggle.

But it is no battle cry to the man who rides on Budd-Michelins. His spare is already mounted on the extra wheel. He

simply lifts off the wheel that has the flat, slips on the extra wheel and is off and away . . . all in four minutes.

This saving of time, perspiration and profanity sounds mighty good to every prospective buyer.





A Million-Car Okeh

Nothing more directly influences engine and car behavior than the carburetion. Factory-standard in a million cars annually, it is very largely up to Carter carburetors to satisfy more than a fifth of all American motor car purchasers each year!

With so much at stake Carter enforces precision and inspection practices which would otherwise seem needlessly rigorous—particularly when the plain tube principle pioneered by

Carter is so free of "temperamental" factors in production and application.

All the way from design and material specifications to finish, packing, and field co-operation, Carter shows extra regard for the purchaser's final good opinion of his whole car. Shaped to this one end, every Carter purpose is made still more effective by the backing of American Car and Foundry Company, the parent institution.

CARTER CARBURETOR CORPORATION, SAINT LOUIS

CARBURETER

A Forecast of the Automobile Business

A summary of opinions in automotive centers indicates that manufacturers will be in a highly competitive position during the next two years.

The race for mass production and lower cost naturally tends to check basic developments and leads to a uniformity of design which fosters unprofitable price competition.

One outstanding development in the industry which points toward relief from destructive competition is the progress being made by manufacturers of Knight-engined cars and the rapidity with which public approval is supplying the market for this superior type of motor car.

Price competition will not divert the growing public preference for Knight-engined cars.

The Falcon-Knight is the only Knight-engined car in the lower price range.

FALCON MOTORS CORPORATION, DETROIT

Falcon-Knight



STEWART-WARNER

Accessories



Bumpers and Fender-Guards

All-steel—lasting nickel finish—reinforcing back-brace—easy installation



Stewart-Warner

**Shock
Absorbers**

Speedometers

Bumpers

Driving Lights

**Windshield
Cleaners**

Horns

Vacuum Tanks

A Complete Accessory Line That Will Pay Increased Profits

Stewart-Warner offers you a complete line of accessories bearing a name that everybody knows. Stewart-Warner Products have a reputation for quality that has been built up in twenty years of successful manufacturing. They will give satisfaction to your customers; they are serviced as are no other accessories, by exclusive Stewart-Warner Service Stations with special servicing equipment in the hands of factory-trained experts.

There are many advantages in selling Stewart-Warner Products. Ready acceptance on the part of your customers, quick delivery from a nearby Stewart-Warner Distributor, the satisfaction and benefits to be had in dealing with a reliable, nationally-known concern.

When you carry the Stewart-Warner line you can turn to one place for stock—one place for service. There's a saving of time and transportation costs. Let Stewart-Warner help you build up a profitable accessory business.

STEWART-WARNER SPEEDOMETER COR'N
CHICAGO, U. S. A.



Stewart-Warner

The Trade-mark of Safety

Did You Enjoy This Copy?



OU can get one like it every week for only \$3.00 a year—an average cost of a little less than six cents each.

Each and every man in the trade needs MOTOR AGE—needs the positive help

it offers in the solution of daily problems and the valuable ideas it gathers for its readers.

Your competitor reads MOTOR AGE, and you need to read it also if you want to keep up with the leaders of the automotive field.

Here's How MOTOR AGE Will Help You

SERVICING—MOTOR AGE will show you how to make flat rates—How to sell Service—How to make customers permanent—How to organize a workshop—How to handle knotty problems—How to select Machinery—How to test electrical systems—How to make quick repairs—How to route shop work.

HIRING—How to get the right men—How to train them—How to pay them—How to get their co-operation—How to keep them enthusiastic.

BUYING—How to select an accessory stock—How to judge merchandise—How to get a fast turnover—How to avoid dead items.

SELLING—How other men do it—How to keep down overhead—How to advertise—How to make Salesmen produce—How to create a market—How to find prospects—How to make every sale pay—How to avoid losses—How to write letters that build business.

AND THEN . . .

Whatever else you need to know to make your business run smoothly MOTOR AGE will tell you if you only ask—All personal inquiries receive personal attention from our editors. Every subscriber is encouraged to come to us with his problems, whether mechanical, legal, architectural or financial. Try us, and we will give you "Service you will like."

THE COUPON is here for your convenience. If you are already a subscriber, pass it on to some friend in the trade who is not. When he starts getting MOTOR AGE he'll appreciate the favor.

MOTOR AGE

5 South Wabash Avenue,
Chicago, Ill.

Gentlemen: Enclosed find \$3.00 to pay for a year's subscription to MOTOR AGE, including all special issues published during the life of my subscription.

Name _____

Street and Number _____

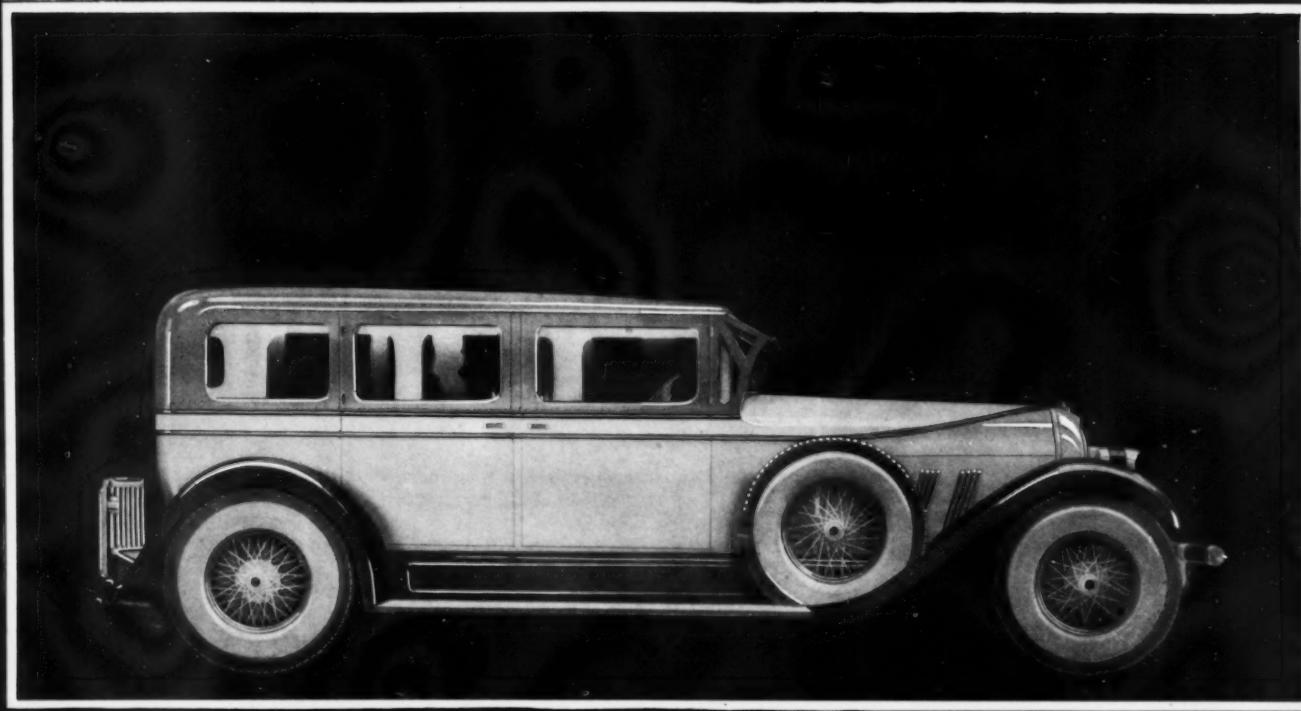
City _____ State _____

Firm Name _____

IMPORTANT—MOTOR AGE is published exclusively for the trade. Subscriptions are accepted only from those actively engaged in our field—so please don't forget to include your business card or letter head with this order.

NOTE: If you are already subscribing to MOTOR AGE, please hand this coupon to a dealer who is not. He'll become a better competitor from reading MOTOR AGE.

TO MORROW YOU'LL WISH YOU HAD THE AUBURN FRANCHISE



The 8-85 Sedan, 130" wheelbase, 80 miles per hour, represents the superlatives. Straight Eight, 85 h.p., 100 m.p.h. The car value is this. One of the completed line of new Auburns, this one meeting with instant and unanimous acceptance.

AUBURN

TOMORROW YOU'LL WISH YOU HAD THE AUBURN FRANCHISE

It does not make a dealer money to swap cars.

The number of cars you put on the streets is not as important as the number of dollars you put in the bank.

We want to hear from dealers who want to make more money.

Our product and our policy will enable you to do so.

We urge our dealers not to make a single sale that is not a profit one.

They do not have to.

The value of the Auburn car itself is the reason.

For people to sell and the Auburn will sell itself.

We know because that is the way we are rapidly increasing.

People want better radios and will pay for them the same as they do for other superior kinds of merchandise.

You can't give away your profits away when you are the Auburn dealer.

Write us for proof.

A U B U R N

The Car Itself is the Reason



The *professional* way of drilling out battery terminals

LEAD . . . Soft stuff! But soft as it is, you can waste time **fast** drilling lead out of battery terminals if the drill isn't designed **for lead**.

The Alvord-Polk Battery Drill takes the lead out of terminals in meaty chips. **Because it's designed to drill lead!** Look at the large flutes. They mean ample chip clearance. Any possibility of the drill binding when drilling is wiped out by the relieved shank a short distance from the cutting edges.

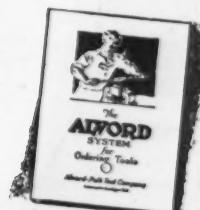
See the Alvord-Polk tool display boards at your jobbers. Buy yourself the Battery Drill . . . Equip yourself with all the tools you need this busy season. If you don't know your Alvord-Polk jobber, write direct.

Alvord-Polk Tool Company
Millsburg, Pa.

List Prices
Usual trade discounts apply

$\frac{1}{2}$ "	\$1.45
$\frac{5}{8}$ "	1.80
$\frac{3}{4}$ "	2.25

Machine shank diameter $\frac{7}{16}$ "
Length of shank $1\frac{1}{4}$ "
Length overall $3\frac{1}{2}$ "
Furnished either with round shank for chuck or with bit stock shank.



Free!

Handy Wall Chart listing make, model and year of car beside each reamer repair job and individual serial number of right reamer for job. Eliminates guess work about fractional sizes and makes ordering easy.

The sixty-four page catalog includes complete Alvord-Polk line and full information on easy ordering system.

Get both the chart and catalog from your jobber or write us direct.



Wall chart for simplified ordering.

ALVORD - POLK

Tools for Repair Shops

MONEY



Original equipment on
America's finest auto-
motive vehicles. Sold
for replacement by
leading jobbers in the
United States and
Canada.

Thompson

MAKERS

In the Engine
VALVES

In the Chassis
BOLTS and BUSHINGS

are among the fastest wearing parts.

THEREFORE—they are among the fastest selling parts of the modern automobile; and car owners welcome quality and dependability, on which you make a better profit.

Thompson Jobbers supply both lines, and Thompson Products are easier to sell because of their acknowledged leadership in quality and their original equipment reputation.

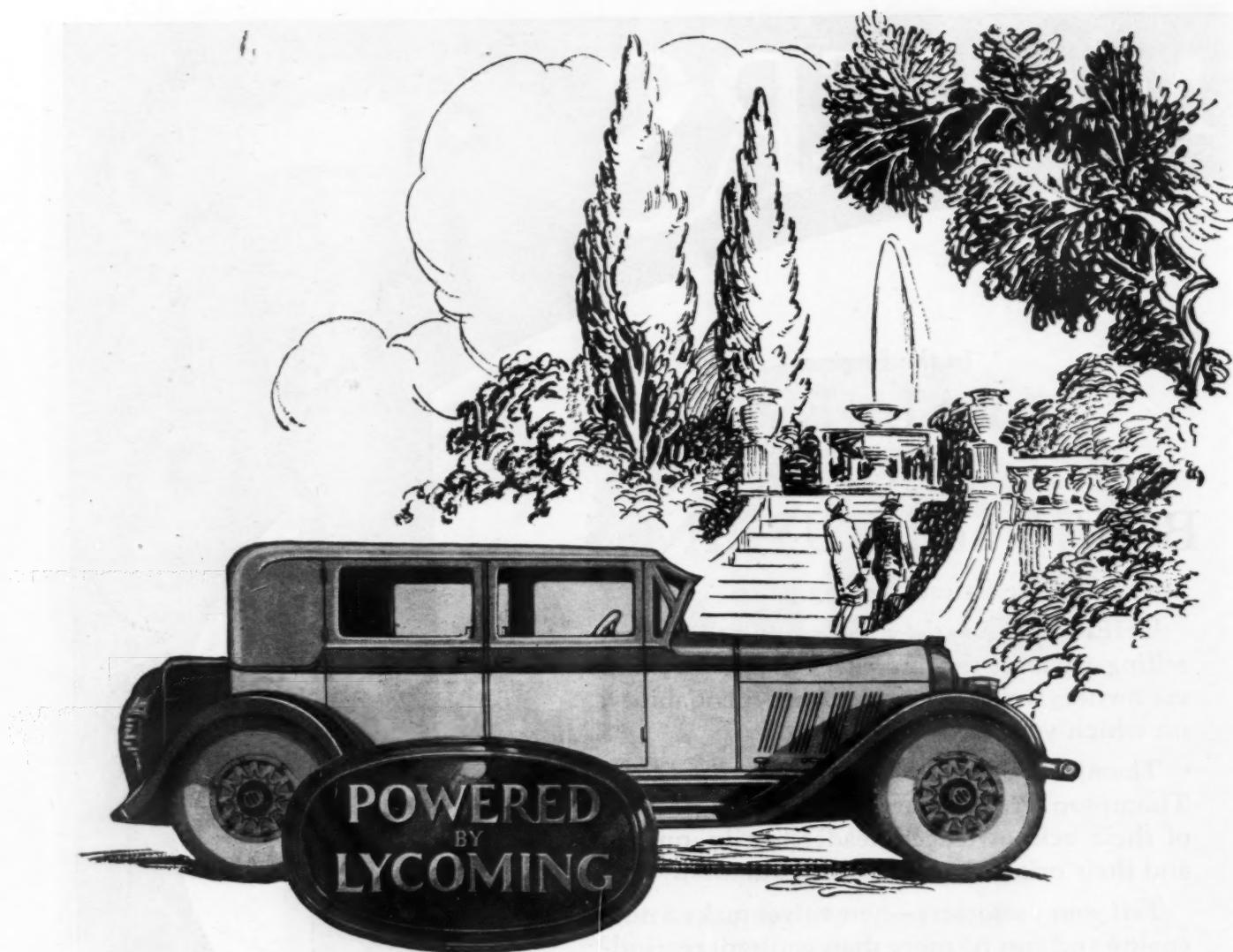
Tell your customers—new valves make a new engine and cost no more than constant regrinding. New bolts and bushings stop the squeaks and rattles when tightening won't do it.

Sell both for double profit.

THOMPSON PRODUCTS, INCORPORATED
General Offices: Cleveland, Ohio, U. S. A.
Factories: CLEVELAND and DETROIT

Product



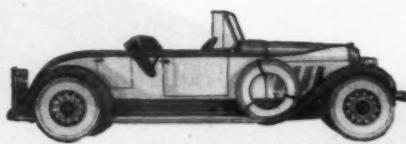


LYCOMING and AUBURN further popularize the SMALLER EIGHT-IN-LINE

OVERCOMING the last barrier to the universal popularity of the Eight-in-Line—price—, Auburn has produced the Lycoming-powered "8-77". Perfect smoothness at all speeds up to 75 miles and a high degree of operating economy are provided by the special Lycoming Motor of the Auburn "8-77". And, as with all Auburn creations, the beauty and comfort of the car match its performance.

Auburn's outstanding growth in sales during recent years is reflected in the ever-increasing demand for Lycoming-powered cars.

Send for the newly-revised booklet, "Powered by Lycoming". It illustrates and describes most of the 200 and more 1927 models of cars, trucks and busses equipped with Lycoming Motors.



Auburn's larger Eight—the "8-88"—is also Lycoming-powered.

LYCOMING MANUFACTURING COMPANY, Makers of fine Fours, Sixes and Eights-in-Line, WILLIAMSPORT, PA.
Export Department—44 Whitehall Street, New York City

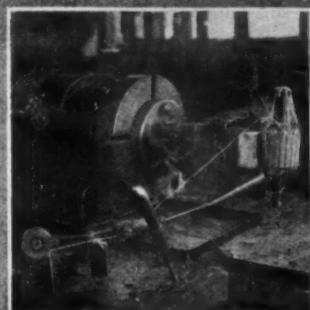
MEMBER OF MOTOR TRUCK INDUSTRIES, INC., OF AMERICA

CARS and TRUCKS
powered with
LYCOMING MOTORS

FOR NINETEEN YEARS BUILDERS OF QUALITY PRODUCTS



Making a Fredericks Rewind from a burned-out armature



Special Winding Machine



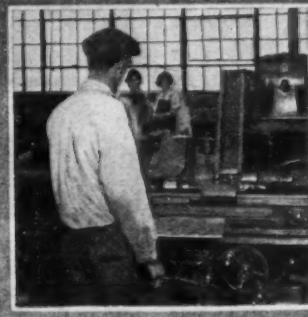
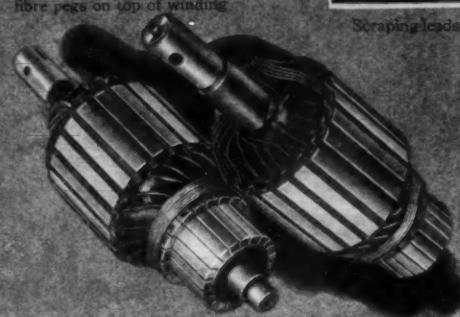
Pegging Machine cuts and inserts fibre pegs on top of winding



Scraping leads on Special Machines



Machine Soldering all leads at one time



Grinding cores on Special Grinding Machines



Undercutting Commutators



Swaging Machine closing slots in commutator after leads are put in

NEW LOW PRICES

Rewinding or exchanging any two-unit type of automobile generator or starter armature

\$2.50

Any type of Ford armature

\$1.50

(Special prices on Ford armatures in quantities)

H. M. Fredericks Company
Lock Haven, Pa.

Gentlemen:

Please send me today, without cost or obligation, a complete price list and details on Fredericks Rewinds.

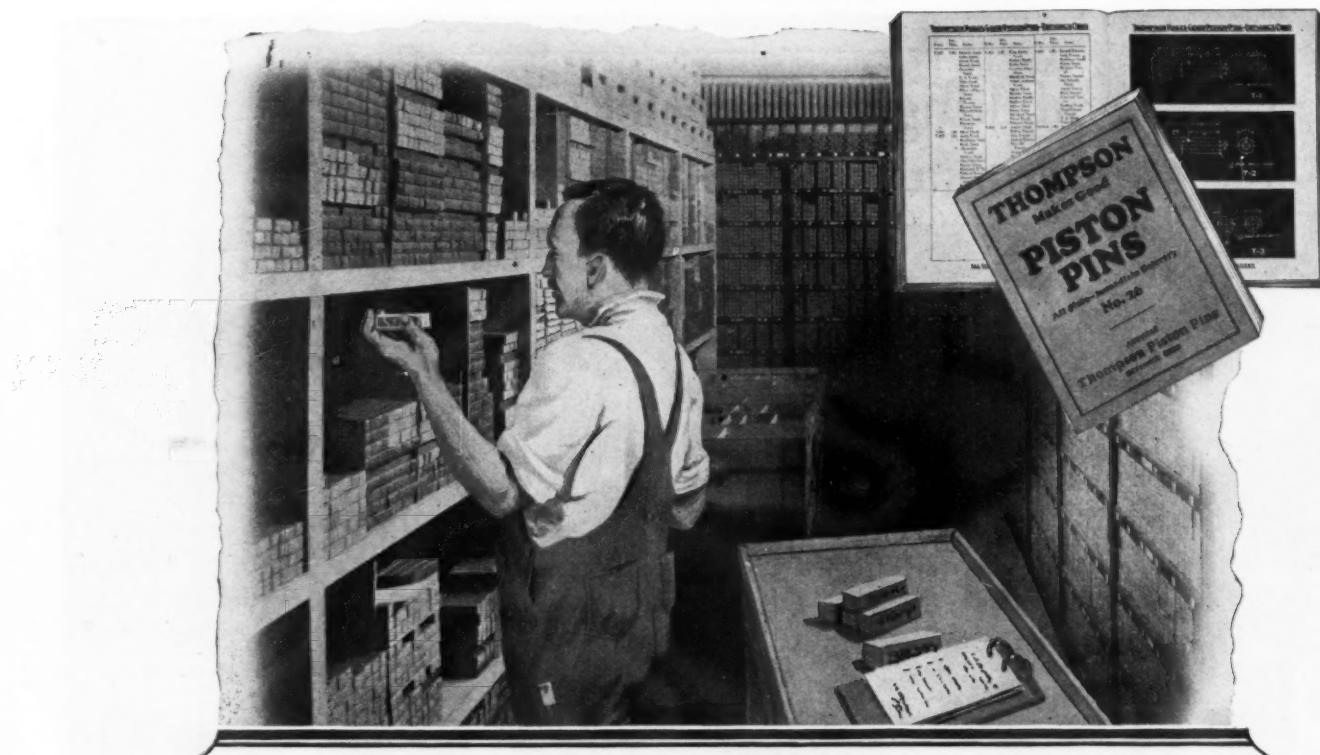
Name.....

Company.....

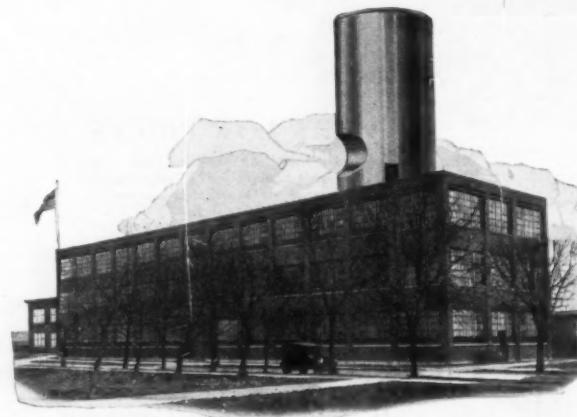
Address.....

THE saving of \$1 to \$3 on every armature by using *Fredericks Rewinds* is an economy endorsed by thousands of America's automotive men. These men expect, and get, new armature service from a Fredericks Rewind. For a Fredericks Rewind is the equal-to-new core of a burned out armature rewound with new wire, boiled in new varnish, insulated on both ends . . . And backed with the same guarantee given a new armature. Save dollars! Try a *Fredericks Rewind* the next time you need an armature.

FREDERICKS
Rewinds



IN STOCK—
Ready for Instant Shipment
FIVE OVERSIZES
of Piston Pins
to every known standard size and type



No reason for you to ever be OUT of Piston Pins. If your jobber doesn't carry Thompson Piston Pins in stock—wire us direct. Within-a-day service is always available—regardless of distance. Piston Pins—ALL sizes—ALL types—plus 5 different oversizes are ready for immediate shipment at Thompson.

Order by wire—using the Thompson Code System—it's easier, quicker—and absolutely prevents mix-ups. Write us today for Ordering Code and Thompson Catalog—full of piston pin dope.

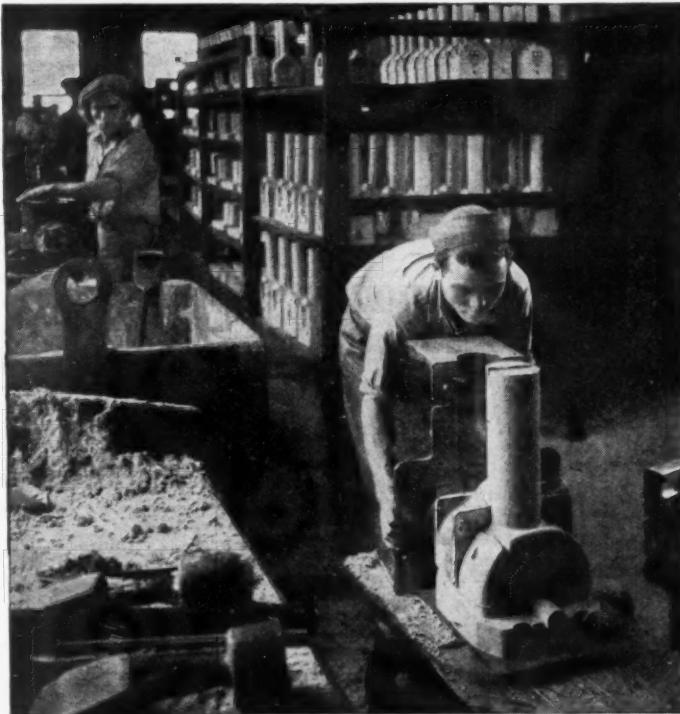
Thompson Piston Pins are machined to .002" accuracy from solid bar stock—then triple heat treated for longest wearing qualities.

THOMPSON PISTON PINS
 Defiance, Ohio

THOMPSON
Piston Pins

CURTIS COMPRESSORS, HOISTS, CRANES, CAR WASH SYSTEMS, PORTABLE COMPRESSOR UNITS

Expert
Core
Makers
in the
Curtis
Foundry



A Curtis Product from raw material to finished compressor

The great 17½-acre Curtis plant is full of examples of skilled work and of specialized production methods—made possible by Curtis' immense production and 73 years' manufacturing experience.

When you buy a Curtis Compressor and get years of unusually satisfactory service from it, you may not think of the expert core-making, for example, that went into it—yet this is one of the contributing factors to successful compressor building.

Selected iron for compressor castings; poured in our own foundries; especially "seasoned" before use; highly standardized parts assembled with meticulous

care; each and every compressor "run-in", adjusted, tested and certified, as carefully as if made to order—is it surprising that Curtis Compressors give more service with less servicing?

For the last 30 years this company has specialized on pneumatic engineering and compressor designing. In the Curtis Compressor, details have been perfected, and "bugs" worked out, to a greater extent than casual inspection will show. The greatest compressor value is unquestionably the Curtis.

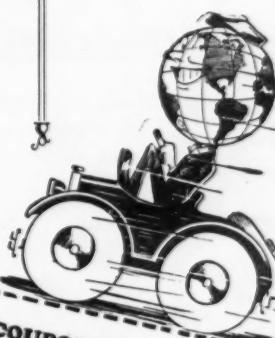


Curtis Style "V" Compressor for garages, filling stations and industrial uses.

The World Rides on Curtis Air!

If you should drive in for "free air" in Singapore or Valparaiso, you would be quite as likely to find a Curtis Compressor at work as you are around the corner from where you live!

Curtis Compressors are used the world over for supplying air for tire inflation, for car washing, materials handling, rock drilling, and the operation of machines and tools of a thousand kinds in factory, field and work shop. To be sure of reliability, every compressor you ever buy should bear the name, "Curtis—St. Louis".



MAIL COUPON TODAY!

CURTIS Pneumatic Machinery Co.
1957 Kienlen Ave., ST. LOUIS, MO.
518-U Hudson Terminal, New York City.
Please send me full information about Curtis
Air Compressors.

Name _____
Address _____



CURTIS COMPRESSORS

CURTIS PNEUMATIC MACHINERY COMPANY, ST. LOUIS, U.S.A.

S
T
A
T
E

— NEW AND USED —

AXLES or ASSB.
RADIATORS or
SHELLS
BODIES
TOPS

GEARS
SHAFTS
MOTORS
TRANSMISSIONS

TIRES
TUBES
RIMS
IGNITION
ETC.

If It's for An Automobile—We Have It!

New and Used Balloon Tires
At a Saving
++

Bosch Magnetos
DU4—\$12.50 DU6—\$10.00
Price on Others on Request
++

And a Special BUICK
Department

MOTORS

Packard—6 cyl.
Cont.—J—4 Truck
Jordan—St. 8
Stutz—Dem. hd. Motor
Oakland—25
Oldsmobile—25
Studebaker—Big 6—26
Ford—Motor—1926
Rickenbacker—6—1924
25% deposit required
on all orders

Timken Bearings
for all Makes of Trucks
and Touring Cars
++

Accessories
New and Used
++
New Generators
6-8 Volt—All Essex—6 cyl.
SPECIAL \$10.50

AUTO PARTS CORPORATION

"Service and Quality"

2011-13-15 S. State St.

Chicago, Ill.

Life-Long Service

An Air Compressor—like the roof of a building—is something you want to buy and forget about.

With the exception of a little lubrication now and then, and maybe a worn part or two, Quincy Compressors require very little attention.

Such service is possible only because

Quincy Compressors are built right in our own factories by Quincy Engineers, from the highest grade materials obtainable. Before you select whatever type of compressor you need, investigate the merits of Quincy Compressors. Our prices are right in line with any make. Our service is equalled by few. Write for complete information to 219 Maine St.

QUINCY COMPRESSOR CO.

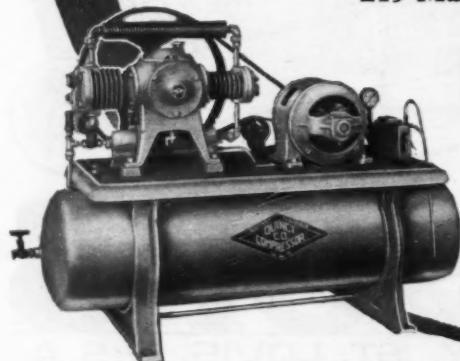
219 Maine Street

Quincy, Ill.



Model G-16

Quincy Silent Air Master
Garages and Service Stations



Model "W"

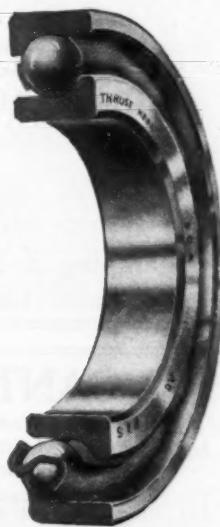
Complete Automatic Unit, Air
or Water Cooled in 3 sizes.
Pneumatic Tools, Sand Blasting,
Etc., Super-Service
Stations, Large Garages

K584



"The Right Bearing

for Every Car"

Angular Contact
Radial Bearing

The Right Bearing For Clutch Pilot Use

The B. C. A. Angular Contact Radial Bearing serves a double purpose in the clutch pilot. It keeps the shaft perfectly aligned and reduces friction to a minimum.

The B. C. A. standard of precision guarantees the dependability of every B. C. A. Bearing. Accuracy is our specialty.

Detroit, Michigan, Office
1012 Ford Bldg.

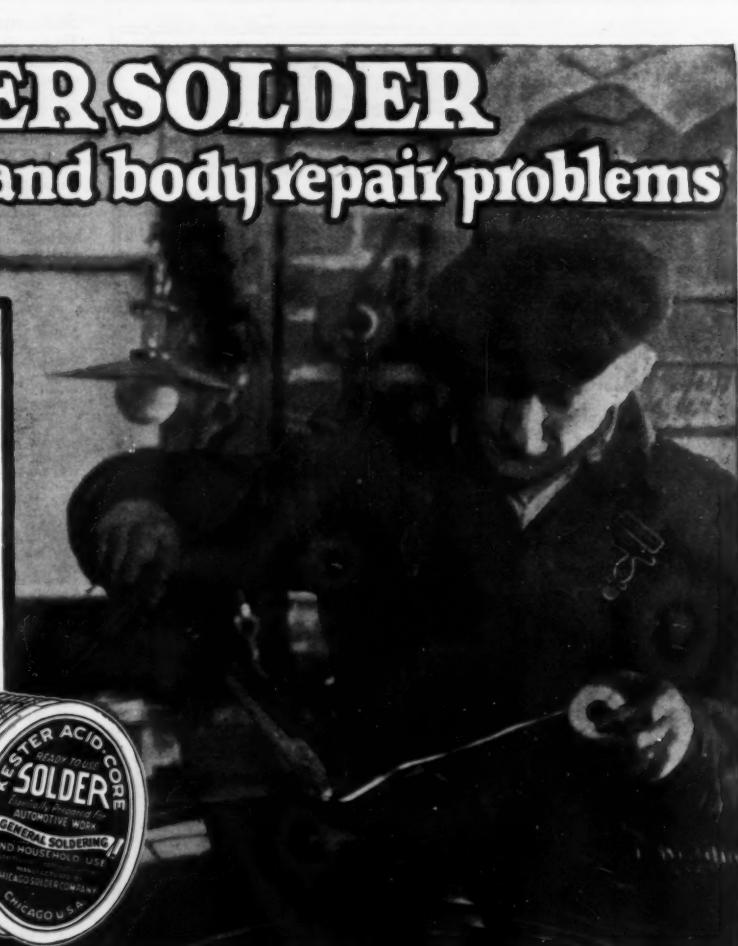
THE BEARINGS COMPANY of AMERICA
LANCASTER, PA.

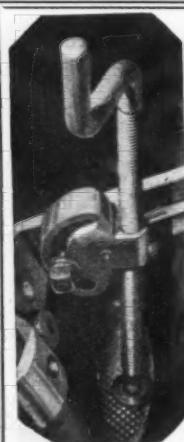
KESTER SOLDER smoothes fender and body repair problems

DENTS in bodies and fenders can often be "pulled" more easily than hammered. The pulling rod to be securely fastened should be soldered with Kester acid-core Solder. Kester makes bonds of greater tensile strength in less time. Deep dents and seams can be neatly and quickly filled with Kester.

In fact for all general soldering Kester is more economical and efficient—for it requires only heat. One, five, ten and twenty pound spools handled by jobbers everywhere. The larger the spool the greater the saving.

**CHICAGO SOLDER
COMPANY**
4203 Wrightwood Avenue
CHICAGO, U. S. A.





Taqué Brake Adjuster Helps ONE MAN Do the Job

It holds brake pedals rigid while adjustment is going on, making it a one-man instead of a two-man job. The difference in profits goes to you.

Write for details concerning its value for repair shops, and the money it can make for you.

**STERRETT-HOSKINSON
MOTOR CO.**

434 Penn Ave. Wilkinsburg, Pa.



It's Easier and Quicker
to Test Tubes

with New DOVER BALLOON TIRE TESTER TANK

Pat. Aug. 26, 1913

Tank is made of sheet steel and galvanized after formation.

Adjustable rod supports the tube.
A great time saver in every shop.

Dover Stamping & Mfg. Co.
385 Putman Ave. Cambridge, Mass.

There Simply Isn't Any Better Flux Made Than Rubyfluid!



Rubyfluid
TRADE MARK REG.
COMBINATION
SOLDERING AND TINNING FLUX

THE RUBY CHEMICAL CO.
68-70 McDowell Street Columbus, Ohio



CANTON

Portable Crane and Hoist
Is Now Equipped with Safety Friction
Load Brake

The purpose of the Canton Portable Cranes and Hoist, equipped as it now is with the new Safety Friction Load Brake, is to make even more money for service and repair shop men, than ever before. The Service Friction Load Brake holds the load at any point, and makes it impossible for the load to get away from the operator. On all new models and for all models already in use. Write for a copy of the illustrated booklet M. A., and additional literature describing the outfit. It will show you the way to better profits.

The Canton Foundry & Machine Co.
Canton, Ohio
New York Office—303 East 18th Street

SIMPLEX Piston Rings

Simplex Piston Rings supersede all other methods of rebuilding cylinders and pistons.

10,000 MILES GUARANTEED
Against Oil Pumping, Piston Slap
and Compression Loss — Backed up by
Simplex Distributors in your Community

Send for details of this short cut scientific method of reconditioning ALL cylinders, no matter how worn, tapered, out of round or heat distorted.

THE SIMPLEX PISTON RING COMPANY
of America, Incorporated
1971 East 66th Street, Cleveland, Ohio

Statement of the Ownership, Management, Circulation,
Etc., Required by the Act of Congress of August 24, 1912
of **MOTOR AGE** published Weekly
at Chicago, Illinois, for April 1st, 1927

COUNTY OF Illinois, SS.

Before me, a Notary Public, in and for the State and County aforesaid, personally appeared C. A. Musselman, who, having been duly sworn according to law, deposes and says that he is Business Manager of **MOTOR AGE**, and that the following is, to the best of his knowledge and belief, true statement of the ownership, management, and of a daily paper, the circulation, etc., of the aforesaid publication for the date shown in the above certificate, rendered by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business manager are: Publisher, CHILTON CLASS JOURNAL COMPANY, 5 S. Wabash Ave., Chicago, Ill.; Managing Editor, Sam Shelton, 5 S. Wabash Ave., Chicago, Ill.; Directing Editor, Julian Chase, 58th and Chestnut Sts., Philadelphia, Pa.; Business Manager, C. A. Musselman, Marion, Penn.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.)

UNITED PUBLISHERS CORPORATION: Stockholders—Charles W. Anderson, 220 Broadway, New York City; James Arman, 906 1st St., Ocean City, N. J.; George H. Buzby, 19th and Walnut Sts., Philadelphia, Pa.; Anna B. Frank, Pleasantville, N. Y.; Fritz J. Frank, Pleasantville, N. Y.; Mabel M. Griffiths, 165 Montclair Ave., Montclair, N. J.; Lillie Lindsay, 698 West End Ave, New York City; James H. McGraw, Jr., 36th St. and 10th Ave., New York City; Elizabeth S. McKee, 80 Upper Mountain Ave., Montclair, N. J.; C. A. Musselman, Marion, Pa.; A. C. Pearson, 169 Christopher St., Montclair, N. J.; Lela C. Pearson, 169 Christopher St., Montclair, N. J.; Charles Swayne Phillips, 495 Park St., Upper Montclair, N. J.; Jennie M. Phillips, 171 Cooper Ave., Upper Montclair, N. J.; Publishers Securities Co., 10 Overlook Park, Montclair, N. J.; Charles T. Root, 2 W. 57th St., New York City; Franklin T. Root, 239 W. 39th St., New York City; Olive Root, 239 W. 39th St., New York City; Root Securities Corp., 33 W. 42nd St., New York City; O. Eugene Sly, Ashville, N. C.; Frederick C. Stevens, 325 West End Ave., New York City; W. H. Taylor, 490 Park St., Upper Montclair, N. J.; Everett B. Terhune, 207 South St., Boston, Mass.

NOTE: Stockholders of Publishers Securities Co.: Velma S. Stevens, 325 West End Ave., New York City; M. J. Swetland, Trustee for Grace E. Swetland, Redlands, Calif.; Ruth S. Kane, Montclair, N. J.; Dorothy S. Johnson, New York, N. Y.; Root Securities Corp., 239 W. 39th St., New York City.

Stockholders of Root Securities Corp.: F. T. Root, Bronxville, N. Y.; George F. Root, Bronxville, N. Y.; Ralph Root, Bronxville, N. Y.; Winifred Root, New York, N. Y.; Royal F. Root, New York, N. Y.; Esther S. Root, New York, N. Y.; Walde Root, New York, N. Y.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) **NONE**

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

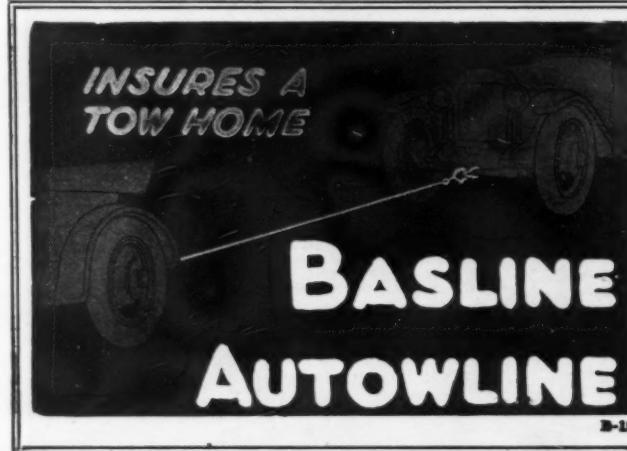
C. A. MUSSELMAN, Business Manager.

Sworn to and subscribed before me this 23rd day of March, 1927.

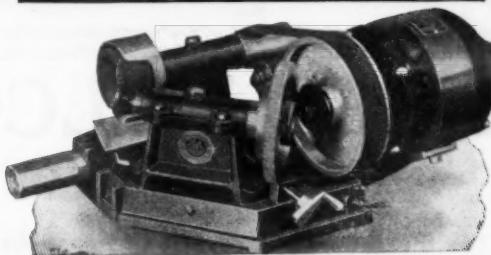
JOHN R. HANNON.

(SEAL)

(My commission expires January 27, 1930.)



*Pay for this
Needed Equipment
as you Use it*



The CROWE
CUPPED WHEEL
VALVE REFACER

No burdensome investment! Easy terms if you want them! The Crowe reclaims valves *perfectly* in 30 seconds. The machine is a time-saver—saves money and time—and pays for itself with a few weeks work. Low cost, \$87.50. Guaranteed!

Find out about saving time and making money with this new, wonderful refacer. Mail the coupon today.

yes

LISLE MANUFACTURING CO.
819 East Main Street, Clarinda, Iowa.

Without obligation, send me more information about the Crowe Cupped Wheel Valve Refacer.

Name _____
Address _____
City _____ State _____

The Lisle Manufacturing Co. also manufactures the new Lisle Re-liner (worn brake lining remover, lining cutter, re-liner and tire chain mender—all in one). Slickest tool you ever saw.

Try It—Then Buy It!

The time to find out that you are pleased with parts and accessories you use, is before you pay for them finally. After you pay without a money-back guarantee, you have to keep what you get, regardless.

Always a Complete Stock of Auto Parts and Accessories

All varieties of new and used accessories are available for immediate delivery at all times from our regular stock. This includes parts for obsolete cars. We have everything for the automobile.

Money Back Guarantee

It is your privilege to order from this stock, get delivery, give inspection, and return within 5 days whatever is not satisfactory. Money is refunded without question. It's the only way to buy.

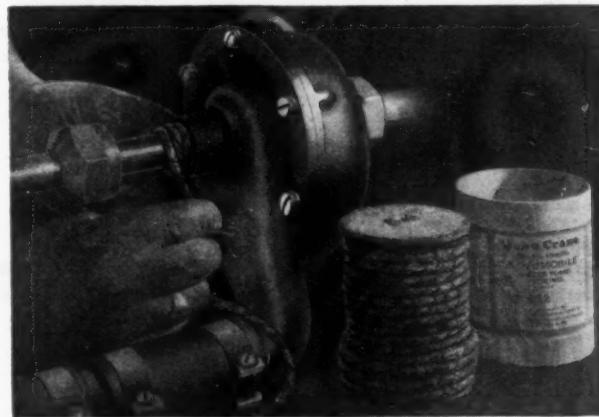
Repossessed Used Cars

Our stock includes all makes—among them always many unusual bargains.

*Ask for our prices. We will
save you money.*

UNITED AUTO WRECKERS
2429 S. State St. Chicago
Established 1916

"John Crane"
Metallic
"The Pump Packing the Motor Builders Use"



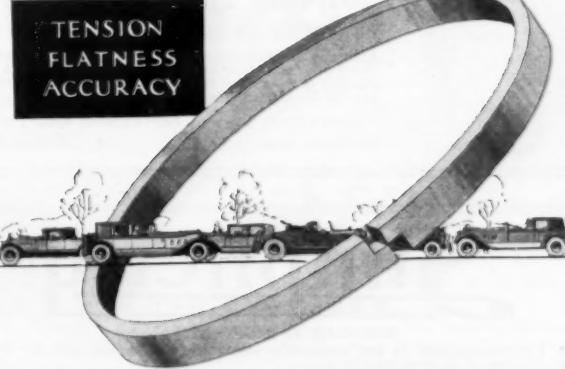
One Size for ALL Pumps

Embodyes exact principles of "John Crane" Packing supplied in modern cars, but in one universal replacement style. Keeps pumps tight, shafts smooth. Saves non-freezing mixtures. Order from jobber or direct. Makes repacking worth more money.

Crane Packing Company

1805 Cuyler Avenue, 109 Broad Street,
Gentlemen: Chicago
Send _____ spools, Style 112, garage size (sufficient for
20 pump packing boxes) C.O.D. \$2.50 Net.

Name _____
Address _____



Get Our
Special
Proposition
for
Fords
and
Chevrolets

LOWER PRICES BIGGER DISCOUNTS!

In THIS case at least, high quality doesn't mean high price—for "Mor-Power" Rings sell for LESS, yet you make more than the usual profit.

"Mor-Power" Rings are standard equipment on Lincoln, Packard, Fordson, etc. They are individually cast of tough grey iron, given a velvet turn finish and individually inspected for accuracy, flatness and tension. Yet with this QUALITY, our production enables us to offer lower prices and special discounts.

Write for our proposition.

Superior Piston Ring Co., Inc.
6429 Epworth Blvd.
Detroit Mich.

"MOR-POWER"

SHIP US YOUR
STEWART—A.C.—NORTH EAST
SPEEDOMETERS FOR REPAIR
Catalogue of Parts and Repair Charges Sent
upon request, WRITE!
SPEEDOMETER SERVICE
1919-21 Chateau St., N. S., Pittsburgh, Pa.
WE ARE NO FURTHER THAN YOUR NEAREST
MAIL BOX



BRUNNER Write for the Book
AIR COMPRESSORS "AIR PROFITS"
describing many new uses for compressed air. Shows how to make an air compressor earn greater profits.
FREE BRUNNER MFG. CO.
UTICA NEW YORK

— **Bigler** —
MOTOR BETTER BUILT TRUNKS
Motor Trunks, Racks and Equipment exclusively. All types and styles.
Genuine Duco finish, or bright black. A money-making line. Write.
BIGLER MANUFACTURING CO. CHIPPEWA FALLS High St. WISCONSIN

GATES VULCO
Fan Belts and Radiator Hose
Made By
The World's Largest Makers of Fan Belts

0000 U. S. REPLACEMENT
GENERATOR FIELD COILS
TO FIT MORE THAN 100
CAR APPLICATIONS.
LIBERAL DISCOUNT TO
DEALERS.
LARGEST STOCK OF EXCHANGE ARMATURES IN THE WORLD.
Write for Free Copy Automobile Armature Data on Popular Late Models.
U. S. ARMATURE SERVICE 11-17 So. DesPlaines St., Chicago, Ill.

PROTEX-A-MOTOR
GASOLINE PURIFIER
Protects the Entire Gasoline System
It puts gas through a triple separation from its
impurities by straining—by filtration—and in ad-
dition by gravity.
Installed between gas tank and vacuum. Set on
self-cleaning 60° angle. Absolutely LEAK-PROOF!
INVESTIGATE!
PROTEX-A-MOTOR MANUFACTURING CO.
Pittston, Penna.

WEIDENHOFF
Shop Equipment
for Battery and Electrical Service
4358 Roosevelt Road, Chicago, Ill.

WILLIAMS
SUPERIOR DROP-FORGED TOOLS
"SUPERRENCH"
(Chrome-Molybdenum)
Guaranteed Against Breakage
J. H. WILLIAMS & CO., BUFFALO, N. Y.


Orrville Spring Governors
Make Smooth-Running Profits
Among the foremost popular sellers for easier riding.
Simple in operation and easy to install. Check the
rebound and control the springs against "galloping".
Ask for illustrated literature and discounts worth while.
ORRVILLE SPRING GOVERNOR CO., INC.
500 Brant Bldg. Canton, Ohio

GYPSY AUTO LIGHT
Both products with easy sales—one for use by owners,
one by shopmen. A good combination for profits. Write
GLADE MANUFACTURING CO.
209 S. State St. Chicago

GLADE SHOP LIGHT

Simplicity
REG. U. S. PAT. OFF.
REBORER AND GRINDER
A big money-maker in any automobile repair shop or garage. Ask for free
demonstration in your own shop.
SIMPPLICITY MANUFACTURING COMPANY
Port Washington Wisconsin

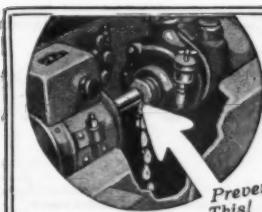
Arrow Head's
most complete and flexible up-to-date line
of pistons and pins assures quick service on
the 4000 most-called-for fits and applica-
tions, including practically "all motors, all
years, all models."
Arrow Head Steel Products Company
Buffalo Minneapolis, Minn. Chicago

TENAX
"ORIGINAL
BLUE
SHEET"
COMPRESSED
ASBESTOS
SHEET
PACKING
For Use Where There is Heat!
ADVANCE PACKING & SUPPLY COMPANY
808 WASHINGTON BLVD., CHICAGO, ILL.
Pacific Coast Distributors: Allied Industries, Inc., Los Angeles, San Francisco,
Portland, Seattle


Let us
send our
profit-
boosting
plan.
It's Free.

WEL-EVER
"OIL CONTROL" PISTON RINGS
The Motor Necessity That Has Made Good
Backed by Seven Years' Satisfactory Service
THE WEL-EVER PISTON RING CO., TOLEDO, OHIO
Sold most everywhere. If your dealer cannot supply you write us.

EATON BUMPERS
BEAUTIFUL — Quick Sellers — Easily Installed
The Eaton Bumper & Spring Service Co., Cleveland, O.



SPRING IS HERE!

Make a permanent repair on the leaky Water-pump. CONNEAUT PLASTIC METALLIC PACKING does the job even on the worn shaft.

All sizes in one can. Stocked at your jobbers.
1 lb. can \$1.75 per lb.
5 lb. can \$1.60 per lb.

Manufactured by

THE CONNEAUT PACKING CO.
Ohio

RADIATOR CAPS



ORNAMENTS

Confidence in a product that has been produced with scrupulous attention to detail is born only of experience. Our clients know they receive only the finest in material and artistry.

FAITH MFG. CO., Inc. 2533-39 N. Ashland Ave., Chicago, Ill.



NO RAD RUST

In WINTER—Reduces anti-freeze evaporation 75%.

In SUMMER—Prevents all trouble resulting from overheated engine by keeping cooling system CLEAN. Get details and discounts.

No Rad Rust Corp.

415 N. Water St., Lancaster, Pa.

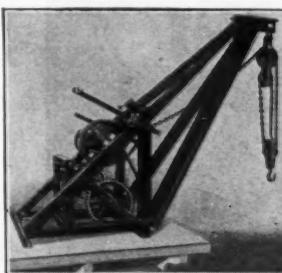
The Burgan Cotter Pin Extractor

Works Like Magic

It goes in anywhere, grips the cotter pin—snaps it out in a jiffy—holds it until released. You don't have to pull or twist. Just squeeze the handles. It's a great tool!

Write for prices and details

THE BURGAN CORPORATION
9 So. Clinton St. Chicago, Ill.



"A. C. E." CRANES

\$63 to \$93

(with auxiliary winch \$60 extra)

**STRONG
POWERFUL
DURABLE**

"ACE" design provides greatest strength. Accurate machine work and big leverage makes them easiest lifting. Swinging, swivel peak allows maximum side-pull. Unequalled Values—Get Yours NOW. Money back if not satisfied. Write for catalog and prices of Runways, Steel Horses, etc. JOBBERS! Get our proposition.

AIR COMPRESSOR & EQUIPMENT CO.
288 E. Genesee St., Buffalo, N. Y.



PROFITS!

Car Drivers Want Them

Small Stock.

Quick Turnover.

Order "Common-Sense" Ventilators today!

Ackerman-Blaeser-Fezzy, Inc.

1262 HOLDEN AVENUE
DETROIT



Here Is Something to Sell!

A piston ring, on the principle of a packing ring, that gives remarkable results in service, is used in thousands by automobile factory branches for replacement—and pays a profit worth while. WRITE FOR DETAILS.

THE CORK-SEALED PISTON RING CORP.
2332 Michigan Avenue, Chicago

Factory: Denver, Colo.

Canadian Distributors: Purser, Bell & Co., Ltd.

Toronto, Canada

WE MAKE RADIATOR CORE MACHINERY

Write for Catalog & Prices

RADIATOR ENGINEERING CO.
FACTORIES BLDG. TOLEDO, OHIO

Portable Electric DRILLS

GRINDERS—POLISHERS

Ash for Catalog 105
The United States Electric Tool Co. Cincinnati, Ohio, U. S. A.
Oldest Builders of Electric Drills and Grinders in the World



The K-S GASOLINE Telegage



A gasoline gauge on the Dash. Note our half page advertisement in the Saturday Evening Post, April 16. Write for description and proposition to the trade.

KING-SEELEY CORPORATION
298 Second Street Ann Arbor, Michigan
Chicago Branch, 2450 Michigan Boulevard



America's
Most Beautiful
Bumper

THE BIFLEX CORPORATION, WAUKEGAN, ILL.

CLASSIFIED ADVERTISING

PATENTS & PAT. ATTORNEYS

C. L. PARKER

Ex-Examiner U. S. Patent Office
Attorney-at-Law and Solicitor of Patents

McGill Building, Washington, D. C.
Patent, Trade Mark and Copyright Law

WANTED

WANTED—Racing engine tachometer with driving chain, must indicate at least 6,000 r.p.m. J. V. Brazier, Box "B," Barnsdall, Oklahoma.

BUSINESS OPPORTUNITIES

Well established garage for sale in Central Illinois. For full particulars write Box 6296, Motor Age, 5 S. Wabash Ave., Chicago, Ill.

CLASSIFIED ADVERTISING RATES

Ten cents a word is the rate for all undisplayed advertisements set solid, regular want ad style; minimum charge \$1 an insertion. All capitals, 12c a word; all capitals, leaded, 15c a word. Payable in advance.



TO THE CAR-DEALER

Mr. Car-Dealer, how many batteries do you send out to be charged each year, and what do you have to pay for this service? Probably quite an item. The B & R 15-U Universal Battery Charger will take care of all this work—installed right in your own shop (and it will save its cost in two or three months.) Ask your Jobber's Salesman for full particulars of this new, inexpensive and efficient service-battery charger, for your use.

The B & R 15-F will do even more—charge 15 batteries in 12 hours if necessary—and without danger, too.

ASK YOUR JOBBER'S SALESMAN



Index to the

The Advertisers' Index is published as a convenience and not as a part of the advertising contract. Every care will be taken to index correctly. No allowance will be made for errors or failure to insert.

A. C. Spark Plug Co.	Back Cover	73
Ackerman-Blueser-Fezzeay Co., Inc.	73	73
Advance Packing & Supply Co.	72	73
Air Compressor & Equipment Co.	73	73
Akron-Selle Co., The	3	73
Albertson & Company	45	73
Alvord-Polk Tool Co.	61	73
American Hammered Piston Ring Co.	Second Cover	73
American Telephone & Telegraph Co.	4	73
Arrow Head Steel Products Co.	72	73
Auburn Automobile Co.	59 & 60	73
Conneaut Packing Co.	73	73
Cork-Sealed Piston Ring Corp.	73	73
Crane Packing Co.	71	73
Curtis Pneumatic Machinery Co.	67	73
Dover Stamping & Mfg. Co.	70	73
Eaton Bumper & Spring Service Co.	72	73
Faith Mfg. Co.	73	73
Falcon Motors Corp.	56	73
Fostoria Screw Co.	Third Cover	73
Franklin, H. H., Mfg. Co.	43	73
Fredericks, H. M., Co.	65	73
Bearings Co. of America, The	69	73
Biflex Corp., The	73	73
Bigler Mfg. Co.	72	73
Bohm Aluminum & Brass Corp.	49 & 50	73
Broderick & Bascom Rope Co.	70	73
Brunner Mfg. Co.	72	73
Budd Wheel Co.	54	73
Burgan Corp., The	73	73
Burton-Rogers Mfg. Co.	74	73
Gates Rubber Co.	72	73
Glade Mfg. Co.	72	73
Canton Foundry & Machine Co.	70	73
Carter Carburetor Corp.	55	73
Chicago Solder Co.	69	73
Chilton Class Journal Co.	6	73
Classified Advertising Section	73	73
Hall Mfg. Co., The	73	73
India Tire & Rubber Co.	51	73

Advertisements

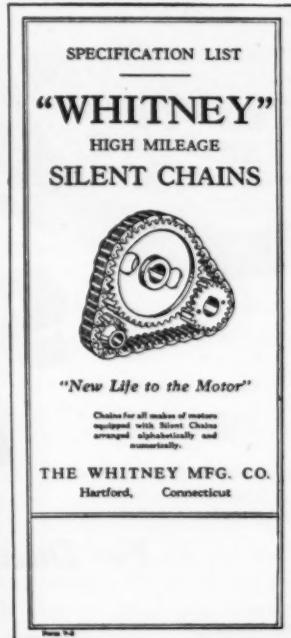
Jordan Motor Car Co.	Front Cover
King-Seeley Corp.	73
Kissel Motor Car Co.	52 & 53
Larkin Automotive Parts Co.	72
Lisle Mfg. Co.	71
Lycoming Mfg. Co.	64
Lyon Metallic Mfg. Co.	41
New Departure Mfg. Co.	7
No Rad Rust Corp.	73
Orrville Spring Governor Co.	72
Protex-A-Motor Mfg. Co.	72
Quincy Compressor Co.	68
Radiator Engineering Co.	73
Ruby Chemical Co.	70
Simplex Piston Ring Co. of America, Inc.	70
Simplicity Mfg. Co.	72
Speedometer Service Co. of Pittsburgh	72
Splitdorf-Bethlehem Electrical Co.	44
State Auto Parts Corp.	68
Sterrett-Hoskinson Co.	70
Stewart-Warner Speedometer Corp.	57
Stromberg Motor Devices Co.	76
Studebaker Corp., The	5
Stutz Motor Car Co. of America, Inc.	2
Superior Piston Ring Co.	71
United Auto Wreckers	71
U. S. Auto Supply Co.	72
U. S. Electrical Tool Co.	73
Weaver Mfg. Co.	1
Weidenhoff, Joseph	72
Wel-Ever Piston Ring Co.	72
Whitney Mfg. Co., The	75
Williams, J. H., & Co.	72
Willys-Overland, Inc.	46 & 47

YOUR CUSTOMER EXPECTS
A PERMANENT AND RELIABLE
TIMING JOB

YOU CAN ASSURE HIM OF THIS BY
INSTALLING

"WHITNEY" SILENT CHAINS

THE CLAIM TO HIGH MILEAGE HAS
BEEN PROVED BY THE TEST OF
MANY YEARS



Send for this
little booklet
containing our
Specification List

3
2
1
51

The Whitney Mfg. Co.
Hartford, Conn.

I want that book on chain specifications.

Name.....

Address.....

Service Station Fleet Owner Parts Jobber



In
Every
Way

*The Last Word
In Riding Comfort*

The Latest and Greatest triumph of Stromberg Laboratories. Designed, Developed and Proved by Stromberg Engineers after two years of experimentation and exhaustive tests.

*New In Every Way
Best In Every Way*

A Shock Absorber that never fails to provide ideal riding over any road. Try a set on your own car and you'll know why.

STROMBERG NEW ANTI-SHOX

For Durability, Performance and Dealer Profit

Here Are the Reasons:

Permit car springs to perform their full function.

Correct resistance regulated automatically for every road condition.

Do not grunt or squeak.

Not affected by changes in temperature.

Brake surface increases and de-

creases proportionate to spring action.

Return action of Anti-Shox Spring coordinates perfectly with car spring.

Sturdy construction. Best materials and workmanship and the Stromberg reputation behind them.

Dealers: Stromberg Anti-Shox make big profits for you as well as satisfied customers. They are advertised nationally and sales will be large. Provide Anti-Shox for your customers and don't let your competitors make the profit. Let us send you all the facts about our new discounts and our dealer's co-operative plan. Write today.

STROMBERG MOTOR DEVICES COMPANY
58-68 East 25th St., Chicago

Direct Factory Branches: 517 W. 57th Street, New York City
1529 Laurel Avenue, Minneapolis

1809 McGee Street, Kansas City

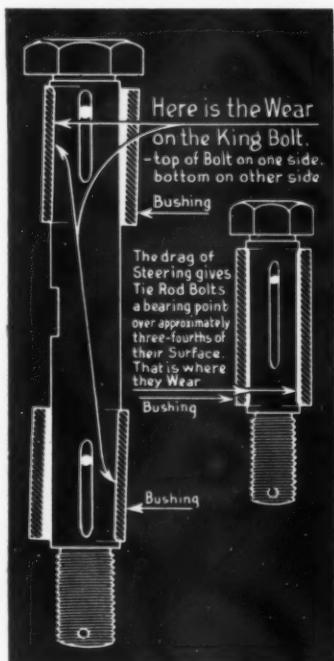
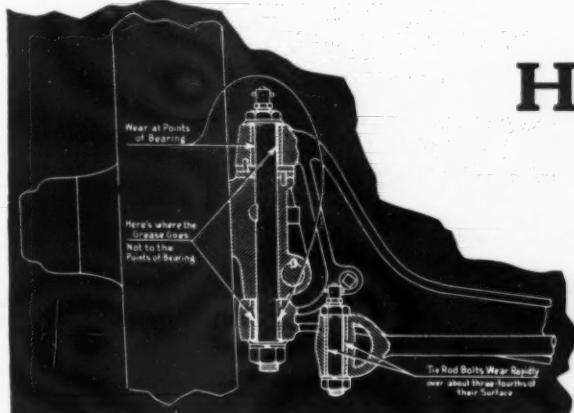
760 Commonwealth Avenue, Boston

London, England, Chelsea, S. W. 10, Milman's Street and Cheyne Walk

Are Your Customers Doing this?

*They are --- if
Their front wheels wobble*

Worn King and Tie Rod Bolts and Bushings cause wobbly wheels which grind out your customers' tires on the road more slowly but just as surely as though on an emery wheel.



DON'T FORGET to ask your Jobber for the B/P Spring Bolt Jack and B/P Bushing Tool. These two tools cut spring bolt and bushing installation in half.

Here's the Reason

The "toeing in" of the front wheels brings the bearing points of the King Bolt on the outside at the top and on the inside at the bottom. Lubrication at these points is difficult as the weight of the car tends to prevent the lubricant reaching the point of wear. With faulty lubrication the wear increases rapidly and so does the clearance opposite the point of wear, permitting the bolt to pound in the bushing, and causing the steering gear to loosen and the wheels to wobble.

Thru neglect and faulty lubrication Tie Rod Bolts and Bushings soon start to wear. After becoming slightly worn the resulting play, in combination with the drag of steering, causes them to wear rapidly over approximately three-fourths of their circumference. Road shocks, as well as showers of water, dust, mud and grit which work into the bearing, hasten the wear and increase the wobble.

They Can't See Their Own Wobble

Thousands of car owners are driving with wobbly wheels and don't know it. You can turn that fact to profit by telling them why their wheels wobble and how once a year renewal of the worn parts with Blue Print Bolts and Bushings will cure the wobble, saving their tires and making steering easier. Try it on the next car that drives in with wobbly wheels and see how easy it is to sell King and Tie Rod Bolt and Bushing renewals.

Ask Your Jobber

Insist on getting Blue Print Bolts and Bushings from your Jobber because they are identical with original equipment and assure your customer a continuance of original equipment service. Or write to us for "The Tale of a Bolt" which tells the reasons for and profits in chassis bolt and bushing renewals.



Made to Blue Print

Blue Print Bolts and Bushings are made to the car manufacturers' blue print specifications and are identical with original equipment in quality, fit, heat treatment and service.

The Fostoria Screw Co.

303 Blue Print Ave.

Fostoria, Ohio

King Bolts,
Spring Bolts

BOLTS **THE** **BLUE** **PRINT** **BUSHINGS**
B/P LINE

Tie Rod Bolts
and Bushings

Why You Will Want to Be an *AC* Dealer

In selling AC Products, the dealer establishes a contact which ties his business to a most powerful organization and makes a lasting connection, insuring enormous business possibilities now and in the future.

AC equipment, positive and increasing from year to year, is building a tremendous replacement business which will carry on and grow as long as the industry lasts.

No competitive lines can offer the volume and consequent profit that AC does and none of them can show such a guaranty for the future.

Practically every make of car now uses one or more, or all AC Products as factory equipment—among these makers being such firms as Buick, Cadillac, Chandler, Chevrolet, Chrysler, Flint-Star, Hudson-Essex, Nash, Oakland-Pontiac, Oldsmobile, Paige-Jewett and Willys-Overland.

There is no question about the quality of AC Spark Plugs and other AC Products.

There is no question as to the sales possibilities.

Practically every motorist wants AC Products, because through their extensive use as original equipment, owners know AC quality and are satisfied users.

That's why it is good policy for dealers to establish their business on a line that gives them not only a profit, but a guaranty for the future.

AC Spark Plug Company, FLINT, Michigan

AC-SPHINX
Birmingham
ENGLAND

Makers of AC Spark Plugs—AC Speedometers—AC Air
Cleaners—AC Oil Filters—AC Gasoline Strainers

AC-TITAN
Levallois-Perret
FRANCE

Over 200 of the world's most successful manufacturers use one or more, or all of these AC Products

AC **AC** **AC** **AC**
SPARK PLUGS SPEEDOMETERS AIR CLEANERS OIL FILTERS